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The Meeting at Atlantic City

THE Annual Meeting of our Association in Atlantic City, June 10th to 14th, 1935, will be a unique event. Although the British Medical Association has held its annual meeting in Canada in conjunction with the Canadian Medical Association on a number of occasions, this is the first time in the history of the American Medical Association and the Canadian Medical Association that they have combined to hold their Annual Meeting. It is true that early in the history of our Association such a project was broached, and the arrangements were carried to a stage which seemed to assure such a meeting, when events occurred which made this impossible. It was contemplated at that time to hold the meeting at Niagara. For many years after this the paths of these two Associations ran parallel, with, however, little or no contact. Recently they have approached closer and closer to each other, until now this happy occasion brings them into the closest harmony.

Although officially we are the guests of the American Medical Association they have been most generous in their desire that the program should be a combined effort. Indeed, in many Sections, their officers have insisted with gracious courtesy that our members should appear on the program in far greater numbers than would seem reasonably proportionate to our relative membership.

The Committees of the various Sections, both of the American and the Canadian Associations, have laboured to provide the best program possible, and I feel that a perusal of their efforts will indicate that they have succeeded admirably. All members of both Associations have heartily cooperated to do all that has been asked of them, and our thanks are due to those who appear on the program for their willingness to make this an outstanding meeting from a professional and scientific point of view.

Atlantic City offers every facility to make such a large gathering a success. One need not emphasize the excellent hotel arrangements, but in addition to this there is the magnificent Municipal Auditorium which will give ample space for the meetings of the numerous Sections as well as the more general scientific sessions. One cannot let this opportunity pass without laying emphasis upon the excellence of the Scientific Exhibits. Here will be found in a graphic form material which illustrates many of the scientific communications. They are excellently presented and detailed study will be well rewarded. These Exhibits cover many phases of modern medicine which may not be touched upon by the program. They are practically all original and are selected for their excellence in demonstrating the more recent advances in science. The local Committee has spared no effort to arrange for the entertainment of the visitors, and it is superfluous for me to emphasize the advantages of Atlantic City for a week of relaxation as well as scientific stimulation.

In order to reward the efforts of those who have laboured to make this meeting an outstanding success it is hoped that large numbers of our members will be present on this historic occasion of our Sixty-sixth Annual Meeting. There is every reason why our Association should be well represented. The program is excellent; and above all we are the guests of our gracious colleagues of the United States. We hope the day is not far distant when they will reciprocate in giving us the delightful opportunity of being their hosts. Such combined meetings can serve only the best purpose in bringing together the medical profession of our two countries. We are close in ideals, in education, and in practice. It but remains for a closer cooperation in matters which are of importance to both Associations.

J. C. MEAKINS, *President-Elect, C. M. A.*

A STUDY ON THE BLOOD-COAGULATING SUBSTANCE PRODUCED
BY STAPHYLOCOCCI AND ITS RELATION TO DISEASE

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IT has been noted for some time that staphylococci produce a substance which coagulates oxalated or un-oxalated blood plasma. At first the experiment was tried with various bacteria,¹ and it was found that *Staphylococcus aureus* produced a more rapid coagulant than those which followed in turn, namely, pyocyaneus, streptococci, and many others. This first work, done in a rather simple but concise fashion, was overlooked and neglected until it was rediscovered,^{2, 3} with especial consideration of substances which normally coagulate blood, such as the thrombin-calcium complex. Further, it was noticed that after the formation of a clot by staphylococci the clot was liquefied by a presumably new substance formed by the same organisms. Here it was supposed that the staphylococci not only produced thrombin but fibrinolytic material which in many strains failed to exert any action.⁴ It was also observed that blood in many cases of infection had an increased clotting power, and that in cases of staphylococci infection, one should investigate the reaction of their presence on the clotting of their host's blood. This work was materially advanced by Kleinschmidt,⁵ who did quantitative work in the matter of the coagulating time by staphylococci and additional chemical enhancement or inhibition of the reaction. He noted that the staphylococci coagulate plasma with a substance called "staphylokinase" in a relatively short time, and that after a period of clotting the clot was again redissolved by a substance which he termed "fibrinolysin". Further, he noted that both of these substances are bound to and expelled from the bodies of living staphylococci and that these substances

were unobtainable from dead organisms. He also noticed that on the addition of dilute phenol to a clot which had undergone liquefaction by fibrinolysin clotting reoccurred rapidly.

These results, with the introduction of minor additions, were ably confirmed.^{6, 7, 8} Other substances produced by these same organisms were noted,⁹ and the effects of staphylokinase on fibrinogen and fibrin recorded for one or two strains of organisms. Gratia,⁸ adopting the idea that the organisms produced thrombin, called the substance "staphylocoagulase". These experiments, although of not too clear a nature, are based on the assumption that the staphylococci are capable of clotting plasma when it is deprived of its mother clotting substance, thrombin. These were also extended by the use of anti-thrombin or hirudin. The claim that autolysates of the organisms gave this substance was admitted, although from our work this conclusion is questionable. The various substances from staphylococci were identified and separated more or less quantitatively by Gross,⁹ as gelatinase, hæmolysin, leucosidin, tryptic ferments, labeferment, and the later-mentioned necrotizing substance, toxin and bacteriophage. The idea was further advanced that staphylococci numbers played a definite rôle in the amount and speed of clotting, an idea which meets with objections. von Daranyi¹⁰ further divided this group of organisms into the saprophyte ferment-forming pus parasites, and those that formed no ferment, with only an incidental mention of coagulating substance. It, therefore, seems reasonable, in view of the variable pictures which staphylococci produce, whether one uses as classifying nomenclature the grouping of

pus-formers or toxin-producers, as the case may be, to attempt to clarify and show the relationship of the clotting phenomenon to the diseases caused by staphylococci. In which case certain suggestive conclusions can be drawn.

Since the work of Panton and Valentine¹¹ the grouping of staphylococci according to their pathological manifestations as far as lesions are concerned has been more or less established. It was certainly well demonstrated by Julianelle¹² that the pathogenicity could not be associated with just one factor as determined in the laboratory, such as a hæmolysin. Therefore, repeating the work of Panton and Valentine, suggestive groups such as these are formed:

- Group 1.—high leucocidin and low hæmolysin
—(pyæmic forms)
- Group 2.—high leucocidin and high hæmolysin
—(small boils)
- Group 3.—low leucocidin and high hæmolysin
—(sycosis, etc.)
- Group 4.—low leucocidin and low hæmolysin
—(saprophytic)

This so-called "typing" of staphylococci was attended with variations and discrepancies. The blood-clotting phenomenon, however, adds more completeness to any attempt at grouping.

Method.—Organisms were plated out from staphylococcal infections. The first set of experiments was conducted chiefly in regard to

the blood-clotting phenomenon; pig and human oxalated plasma yielded about the same results, whereas the ox gave variations. The organisms can be washed by centrifuging, or mixed directly with the plasma from a 24- or 48-hour culture in varying quantities and the clotting time recorded. Toxin and necro-toxin were tested in the skin of rabbits, whereas leucocidin was developed by the same method which Julianelle employed.

Experiments.—The staphylococci used in this experiment were taken from a patient suffering from furunculosis of twelve years' duration. The infection was of a sluggish nature, with no demonstrable bacteriæmia, and an associated leukæmia. The staphylococci were obtained from a carbuncle. Human plasma was used.

TABLE I.

Toxin	Leucocidin	Hæmolysin	Necrotoxin	Blood-clotting Power	Clot-redissolving Power
None	some ++	++++	+	++++	+

The following Table shows the different clotting time with various dilutions of washed staphylococci. A seventy-two hour culture was used. The amount of oxalated plasma was 2 c.c.

TABLE II.

Dilutions	3 hrs.	4 hrs.	5 hrs.	6 hrs.	10 hrs.	12 hrs.	30 hrs.
1.1	++++	++++	++++	++++	++++	++++	++++
1.5	++++	++++	++++	++++	++++	++++	++++
1.10	+++	++++	++++	++++	++++	++++	++++
1.50	++	++	+++	++++	++++	++++	++++
1.100	+	+	+	++	+++	+++	++++
1.200	+	+	+	++	+++	+++	++++
1.500	-	+	+	+	+++	+++	+++
1.1000	-	-	-	+	+++	+++	+++

++++ signifies a complete non-movable clot; +++ means a trace of liquid and the clot can be spilled from the tube; ++ means a clot within an area of considerable liquid; and + is equivalent to some turbidity and beginning gel. Apparently in high dilutions the organisms had to increase in number before a clot could be formed. Naturally, if the amount of plasma is less in such cases the clotting time will be diminished.

In Table III, the supernatant washing from a 5 c.c. broth culture of 72 hours of staphylococci from the same patient was used: 0.1 N NaCl was added to the organisms after the first centrifuging. They were then centrifuged again and the supernatant fluid was filtered for use.

TABLE III.

No. of Tubes	Dilutions	3 hrs.	6 hrs.	8 hrs.	24 hrs.
5	1.0	+++	+++	+++	+++
5	1.1	+	+	+	+
5	1.5	-	-	-	-

In no case was a complete clot formed, and as there were no organisms present, no apparent increase in clotting occurred with time,—the staphylokinase was only present in a limited quantity.

The effect of temperature on the coagulating power of staphylococci in which a 48-hour culture was used and various portions of ice were heated at the temperatures indicated; they were then mixed with 2 c.c. of oxalated human plasma.

TABLE IV.

Degree C	3 hrs.	6 hrs.	12 hrs.	18 hrs.	30 hrs.
50	+++	++++	++++	++++	++++
55	+++	++++	++++	++++	++++
60	+++	++++	++++	++++	++++
65	++	++	+++	++++	++++
70	++	++	++++	++++	++++
75	++	++	+++	+++	++++
80	-	+	+	+	++
85	-	-	+	+	++
90	-	+	+	+	+
95	-	-	-	-	-
100	-	-	-	-	-

Even in Table IV we see that the influence of the temperature on the staphylococci is one of reducing their numbers by thermal death, and, consequently, the few survivors can only reproduce themselves considerably before they exude the plasma-clotting substance.

The coagulating effect of *Staphylococcus aureus hæmolyticus* (Pugh₁) on various specific

oxalated plasma in six hours is indicated in Table V.

TABLE V.

Dilutions of 48 hrs. broth culture	Human	Pig	Rabbit	Dog	Ox
1.0	++++	++++	++	+++	+++
1.1	++++	++++	+	++	+++
1.5	++++	+++	-	-	+++
1.20	++	+	-	-	+

In this experiment the blood obtained from animals was quite fresh. The influence of time on standing plasma gives variable results, depending on many conditions, such as the degeneration of fibrinogen 1 and the changes of fibrinogen 2. The above experiment can only suggest animal variation in serological properties. Since pig plasma and human plasma have in the course of our work appeared reasonably similar for staphylococci clotting power, we shall use the former where large quantities of plasma are concerned.

TABLE VI.

MIXTURES OF HEAT-KILLED ORGANISMS (STAPH. PUGH₁) AND OXALATED HUMAN PLASMA

Dilutions	3 hrs.	6 hrs.	8 hrs.	12 hrs.
1.0	-	-	-	-
1.1	-	-	-	-
1.5	-	-	-	-

TABLE VII.

MIXTURES OF FORMALINIZED ORGANISMS, SUBSEQUENTLY WASHED AND ADDED TO OXALATED HUMAN PLASMA

Dilutions	3 hrs.	6 hrs.	8 hrs.	12 hrs.
1.0	-	-	-	-
1.1	-	-	-	-
1.5	-	-	-	-

Again we find that death or inactivity of the organisms fails to produce the staphylokinase, having no effect whatsoever on plasma.

TABLE VIII.

ADDITION OF A NINE-DAY BROTH CULTURE OF STAPHYLOCOCCI (PUGH₁) AND NINE-DAY FILTRATE TO OXALATED PIG PLASMA

Dilutions	3 hrs.	6 hrs.	8 hrs.	12 hrs.	24 hrs.
Culture 1.0	++++	++++	++++	++++	++++
1.1	+++	+++	++++	++++	++++
1.5	+++	+++	++++	++++	++++
Filtrate 1.0	-	-	-	-	-
1.1	-	-	-	-	-
1.5	-	-	-	-	-

It appears that the filtrate does not contain the substance which can be ordinarily washed off the bodies of living staphylococci (Pugh₁) with 1 NaCl.

The following experiment is merely a subsidiary one which has been suggested by the question of the thrombin-like qualities of staphylokinase. To recall our recent concept of physiological blood clot formation, leaving out the supplementary agents,—essentially, thrombin plus fibrinogen equals a clot. If staphylokinase is the same substance as thrombin we should expect a clot when it is added to fibrinogen.

Other variations of the above fractions (Table X) seemed only to indicate that fibrinogen alone would not be resolved into a clot, but that the admixture with the albumin fraction or something adherent to this fraction seems necessary. Consequently, the previous conception that staphylokinase acts like thrombin meets with objections.

TABLE IX.

CONCERNING THE PRODUCTION OF THE SUBSTANCE CALLED BY KLEINSCHMIDT "FIBRINOLYSIN", WHICH SEEMS TO APPEAR OR EXERT ITS INFLUENCE ONLY AFTER A PERIOD OF SOME TIME

Hrs. culture Staph. (Pugh ₁) in dilutions of 1:1	24 hrs.	28 hrs.	30 hrs.	34 hrs.	38 hrs.	40 hrs.
5 hrs. culture 1:1	++++	++++	++++	++++	Some slight liquefaction	
10 hrs. culture 1:1	++++	++++	++++	Clot slightly loosened.	Clot slightly loosened.	Liquefaction increase.
20 hrs. culture 1:1	++++	++++	+++	Some liquefaction with loose and decreased clot.		
30 hrs. culture 1:1	++++	++++	Beginning liquefaction	Clot slightly loosened.	Clot slightly loosened.	Dimunition of clot.
40 hrs. culture 1:1	++++	++++	Beginning liquefaction	More marked than 30 hrs. Staph. (Pugh ₁) culture.		

It seems that this liquefaction process is increased by using cultures which contain more organisms and are still in the stage of active growth. In other cultures which were used and in which the plasma-clotting power, as in the staphylococci (Pugh₁), the fibrinolysin power was not noted but the clots degenerated as any clot would do under the influence of temperature and bacteria. The above results are certainly not clinching enough to sustain the view of fibrinolysin as a separate discrete marked entity of staphylococci in disease.

One of the more pertinent questions which presents itself is the relation of the phenomena mentioned in the Tables to the pathological rôle of the *Staphylococcus aureus* in disease. Certainly, the staphylococci obtained from Case 9 (Pugh₁) elicited remarkable clotting power as well as hæmolysis. The following Table (XI) may add something of value towards the prognosis in staphylococcus infection.

The few samples of organisms obtained from various infections (see Table XI) suggest a cer-

TABLE X.
STAPHYLOCOCCUS PYOGENES AUREUS (PUGH₁)
PIG OXALATED PLASMA FRACTIONED EITHER BY SODIUM CHLORIDE
OR AMMONIUM SULPHATE EXTRACTIONS

Dilutions of 24 hrs. broth culture, washed with 0:1 saline	Fraction	Time				
		3	6	12	18	25
1:1	whole plasma	+++	++++	++++	++++	++++
1:2	" "	++	++++	++++	++++	++++
1:5	" "	+	++++	++++	++++	++++
1:1	globulin fraction	-	-	+	++	++
1:2	" "	-	-	+	++	++
1:5	" "	-	-	-	-	+
1:1	albumin fraction	+	+	+	+	+
1:2	" "	-	+	+	+	+
1:5	" "	-	+	+	+	+
1:1	fibrinogen fraction	-	+	+	+	+
1:2	" "	-	-	-	-	-
1:5	" "	-	-	-	-	-
1:1	fibrinogen-globulin	-	+	++	++	++
1:2	" "	-	+	+	+	+
1:5	" "	-	-	-	-	-
1:1	fibrinogen-albumin	+++	++++	++++	++++	++++
1:2	" "	+++	++++	++++	++++	++++
1:5	" "	++	+++	++++	++++	++++
1:1	fibrinogen-euglobulin	-	-	-	-	-
-	fibrinogen-thrombin	++++	++++	++++	++++	++++

tain relationship between the disease entity as produced by them *in vivo* and their laboratory reactions *in vitro*. In the cases where only a mild toxin, a strong hæmolysin, and a strong blood-clotting power exist the prognosis is very suggestive of a rather chronic and not too severe infection. On the other hand, those organisms with a slight blood-clotting power, weak hæmolysin, indicative toxin, prognosticate acuteness, fever, with little chance of chronicity.

CONCLUSIONS

1. Staphylococci generally are capable to a greater or lesser degree of producing a toxin, leucocidin, hæmolysin, necrotoxin, staphylokinase (blood-clotting substance), and a fibrinolysin (blood-dissolving substance).

2. The staphylokinase is produced in progressive amounts and in quantitative relation to the dilution of organisms. This substance can be washed from the surface of the organisms.

3. The staphylokinase is destroyed at a temperature of 85° C., and this process is dependent on the thermal death of the organisms.

4. Staphylokinase has a coagulating effect on the oxalated plasma of various animals, *i.e.*, human beings, pig, rabbit, dog and ox. The variable results are due to the degeneration of fibrinogen 1 to fibrinogen 2.

5. After clot formation by specific staphylococci dissolution of the clot takes place, usually in 20 hours, through a specific substance called "fibrinolysin".

TABLE XI.

	Duration of Infection	Type	Clinical Course	Leucocidin Necrotoxin Toxin	Hæmo- lysin	Blood coag.
Case 1	3 weeks	Infection of the lip.	severe	+++	+	-
Case 2	7 weeks	Pyæmic.	severe	+++	+	+
Case 3	....	Carbuncle of lip.	severe	++++	++	+
Case 4	14 days	Staph. tonsillitis.	severe	+++	++	+
Case 5	....	Small furuncle on back.	good	++	+++	+++
Case 6	3 weeks	Furuncle on back of neck.	good	++	+++	+++
Case 7	....	Furuncles, chronic, with diabetes.	fair	++	++++	++++
Case 8	12 years	Long staph. infection with extended appearances of abscesses.	fair	+	++++	++++
Case 9	....	Sycosis barbæ.	fair	++	++++	++
Case 10	Until healing	Staph. obtained from wound.	good	+	+	-
Case 11	Until healing	Staph. obtained from a non-healing infected wound.	good	-	-	-

6. The process of clot-formation by staphylococci does not depend on the same mechanism as that formed by the calcium-thrombin complex.

7. Staphylococci exhibiting a strong tendency to produce clot formation are usually associated with chronic disease having a fair prognosis.

8. Perhaps chronic staphylococcal disease exhibiting various out-croppings of abscesses, with a non-demonstrable bacteriæmia, may depend on embolic clot-enclosed organisms which may be caught in various capillary beds.

I am deeply indebted to Dr. Tillet, of the Johns Hopkins Hospital in Baltimore, Maryland, for his guidance in this work.

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THE ZOSTER VIRUS.—S. A. Glaubersohn and G. S. Barg remark that the prevailing uncertainties concerning the relations of the viruses of herpes zoster, symptomatic herpes, and varicella are largely due to their being practically incommunicable to lower animals, although the possibility of transference from man to man by injection has recently been proved. They point out the scientific and practical desirability of culture of the virus, and give the results of their endeavours to do so in tissue cultures—rabbit plasma containing an equal amount of tyrode solution and fragments of embryonic chicken heart. The content of the vesicles in herpes zoster, sterile in ordinary bacteriological tests, preserves its activity after four days' incubation at 37° C. and

two further days at room temperature, in tissue cultures: injected into two children it was found to produce locally typical vesicles and crusts, which were absent in control children injected with cultures to which tissue fragments had not been added. The incubation periods were nine and sixteen days respectively. In one child, shortly afterwards exposed to chicken-pox infection, a typical varicella rash occurred, so that the zoster virus had not protected against chicken-pox. On the other hand, neither of the vaccinated children caused infection with varicella in their numerous contacts. The zoster virus, in 40 per cent glycerin, appears to retain its activity for at least four days in the ice chamber.—*Acta Med. Scand.*, lxxxii, V-VI, 1934, p. 579 (Abs. in *Brit. M. J.*)

THE PLASMA CHLORIDES IN PNEUMONIA AND THEIR CLINICAL SIGNIFICANCE*

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THE determination of the chloride content of blood and urine in pneumonia is an old procedure. In spite of the voluminous literature, however, the metabolism of chlorides in this disease is still imperfectly understood. For this reason, there is as yet much doubt about the clinical value of such studies. A number of conditions have contributed towards this uncertainty. Technical difficulties were not the least important; as different methods of estimating chlorides yielded different values, data were often compared with data which were not comparable. Aside from this, there were those which resulted from comparing whole blood with plasma or serum, and it is now a well recognized fact that the concentration of chloride in whole blood is not the same as in that in plasma or serum. In 1928, Wilson and Ball described a very satisfactory method for the estimation of blood chlorides.¹ It was, therefore, considered of interest to re-investigate this phase of pneumonia, in order to determine the clinical value of such studies. An attempt was made to correlate laboratory data with a variety of clinical phenomena, such as signs and symptoms; progress and prognosis; type, site and extent of lesion; stage of the disease; and effects of treatment. The literature of this subject has been reviewed repeatedly.^{2 to 6} For purposes of brevity, therefore, reference will be made to relevant data only.

According to Hutchison,² Redtenbacher in 1850 first made the observation that the excretion of chlorides in the urine is diminished in pneumonia. Traube (1867) suggested that the diminished excretion is more apparent than real, and is due to defective absorption of salts from the alimentary tract. In 1880, however, Rohmann¹³ found by balance experiments that the intake of chlorides exceeded the output.

In 1884, Runeberg first made the observation that the concentration of chlorides in the blood is also diminished. This has been confirmed repeatedly since, and it is now also known that the decrease is accompanied by a slight increase in the concentration of chlorides in the tissues. Their increase in the "hepatized" lung and sputum may be quite marked.^{2, 3} As will presently be shown, however, the decreased urinary excretion at certain stages in the disease may not be due entirely to chloride retention in the tissues.

Though retention of chlorides is now a well recognized phenomenon,^{2, 6, 7, 8, 9} the mechanism of the retention is not, as yet, understood. It may be due partly to water-retention.^{6, 7} The latter has been demonstrated repeatedly by a variety of methods—estimation of body weight,⁸ chemical analysis,² elastometry,¹⁰ etc. Frankel (1875) suggested that the retention of chlorides may be due to impairment of the kidneys. Hutchison objected to this view because he found retention of chlorides with little or no renal damage. That healthy kidneys may offer a barrier to excretion of chlorides was, however, suspected by Hutchison "Their (the chlorides) failure to appear in the urine", he suggested, "must be attributed to the very delicate adjustment of the amount excreted by the kidney to the amount contained in the blood at the time." That there is a renal threshold for chlorides is now a well recognized fact. This was first demonstrated by Magnus,¹¹ and has been confirmed repeatedly, but as Aitken¹² has shown, the threshold may vary within fairly wide limits.

Retention of chlorides is not uniform throughout the disease; it is influenced by a variety of conditions. Data obtained in man during the first few hours of the pneumonic process are not available. In dogs, however, it would appear that retention is not an early phenomenon. As a matter of fact, a loss of chlorides has been demonstrated in the very early stages. Ex-

* From the Medical Services of Dr. C. P. Howard and Dr. A. H. Gordon, and the Department of Metabolism, Montreal General Hospital.

cretion appears to parallel the development of the fever,* and it has been suggested that a rapid initial loss may account to some extent for the diminished excretion noted later in the disease.

METHOD OF INVESTIGATION

Selection of cases.—This study included 51 cases of lobar pneumonia and 25 cases of broncho-pneumonia. Age and sex incidences of the subjects are shown in Table I.

TABLE I
INCIDENCE

Type of pneumonia	Total		Male		Female	
	No. of cases	Average age	Cases	Average age	Cases	Average age
Lobar pneumonia	51	35.1	46	33.6	5	48.4
Broncho-pneumonia . .	25	38.2	17	37.4	8	39.7

Of the 51 cases of lobar pneumonia 7 were not typed. The types of the remaining 44 cases and their incidences are shown in Table II.

TABLE II
TYPES OF LOBAR PNEUMONIA
(44 cases)

Type	Number	Incidence percentage
i	12	27.3
ii	5	11.4
iii	7	15.9
iv	20	45.4

Technique.—This study was concerned with blood analyses only. All analyses of plasma were made with the technique described by Wilson and Ball.¹

Discussion of results.—In all, there were 338 analyses. They are summarized in Table III.

TABLE III
AVERAGE PLASMA CHLORIDE ESTIMATIONS IN LOBAR AND BRONCHO-PNEUMONIA

Type	Cases	Number of estimations	Average plasma chloride, mg. per 100 c.c.
Lobar pneumonia . . .	51	231	0.521
Broncho-pneumonia . .	25	107	0.558

It will be observed that the average value (expressed as mg. NaCl per 100 c.c. plasma) was

* In this respect, pneumonia appears to resemble malaria.

521 mg. in the lobar pneumonia group, and 558 mg. in the cases of broncho-pneumonia. In the latter condition, therefore, there was a slight tendency toward a decrease; the average corresponded to the lower level of the generally accepted normal range, namely, 560 to 620 mg. In the cases of lobar pneumonia, the average was definitely below normal.

Type of disease.—This investigation was confined to the cases of lobar pneumonia. The results are summarized in Table IV. It will be

TABLE IV
PLASMA CHLORIDES IN LOBAR PNEUMONIA
RELATED TO TYPE

Type	Number of cases	Determinations	Average plasma chloride, mg. per 100 c.c.
i	12	52	0.513
ii	5	32	0.525
iii	7	38	0.507
iv	20	75	0.528

noted that the lowest average chloride content was found in Type iii infection. This is of more than academic interest since it is this type of the disease which is considered to cause the highest mortality.

Site of lesion.—Since the localization of lesions in broncho-pneumonia is very uncertain, the investigation on this point was also confined to the cases of lobar pneumonia. The data are summarized in Table V. It will be observed that no definite relationship was found.

TABLE V
PLASMA CHLORIDES IN LOBAR PNEUMONIA
RELATED TO SITE OF LESION

Site of lesion	No. of cases	Determinations	Average plasma chloride, mg. per 100 c.c.
Right lower	16	86	0.531
Left lower	2	11	0.495
Right upper	2	4	0.545
Right middle	17	70	0.519
Left lower - left upper	2	9	0.490
Left lower - right lower	1	2	0.450
Right middle - right lower	4	15	0.519
Right upper, middle and lower	4	18	0.495
Right upper, middle, lower and left lower	1	2	0.517
Left lower - right middle	1	11	0.540
Right upper - right middle	1	4	0.554

Duration of illness.—An attempt was made to determine whether there was any relationship between the duration of illness and the level of the plasma chloride. The combined data are shown in Table VI. It will be noted that no

TABLE VI
PLASMA CHLORIDES IN LOBAR AND BRONCHO-PNEUMONIA
RELATED TO DAY OF DISEASE

Lobar pneumonia			Broncho-pneumonia	
Day of disease	No. of determinations	Average plasma chloride, mg. per 100 c.c.	No. of determinations	Average plasma chloride, mg. per 100 c.c.
2	5	507	1	556
3	6	516	2	548
4	11	517	3	543
5	21	515	7	553
6	25	524	8	529
7	26	523	9	552
8	27	517	8	566
9	19	539	10	556
10	16	540	7	579
11	8	534	8	564
12	6	529	8	575
13	4	528	6	557
14	5	543	5	546
15	5	520	4	562

relationship was found in the cases of broncho-pneumonia. In the group with lobar pneumonia the average values were below the normal throughout the course of the disease, but much more so during the first eight days of illness. The more marked reduction of plasma chlorides corresponded to the average duration of the febrile period. An attempt was therefore made to correlate the degree of fever with the blood findings. The data are summarized in Table VII. It will be observed that, in

TABLE VII
PLASMA CHLORIDES IN LOBAR AND BRONCHO-PNEUMONIA
AS RELATED TO TEMPERATURE

Lobar pneumonia			Broncho-pneumonia	
Temperature, degrees	No. of determinations	Plasma chloride, mg. per 100 c.c.	No. of determinations	Plasma chloride, mg. per 100 c.c.
98	15	0.536	10	0.564
99	67	0.533	16	0.586
100	42	0.531	27	0.555
101	34	0.506	19	0.553
102	32	0.516	13	0.557
103	25	0.492	19	0.547
104	13	0.518	..	..

general, in the cases of lobar pneumonia the temperature varied inversely as the concentration of chlorides in the plasma. This was not as definite in the cases of broncho-pneumonia. It should be noted that temperature readings and collection of blood were performed simultaneously. All samples were collected at eight o'clock in the morning.

The above findings, in general, fit in with those reported previously. Rohmann¹³ first ob-

served that it was during the febrile stage of the disease that the excretion of chlorides in the urine was diminished. Maver and Schwartz¹⁰ observed that the concentration of chlorides in the plasma was decreased at the height of the fever. Hutchison,² however, was unable to find a relationship between the height of the fever and the chloride excretion.

TREATMENT

In this study, the cases were divided into two groups, namely, (a) those who received serum, and (b) those who were treated without it. The results are shown in Table VIII. It

TABLE VIII
PLASMA CHLORIDES IN LOBAR PNEUMONIA AS RELATED
TO TREATMENT WITH AND WITHOUT SERUM

Treated with serum (31 cases)			Treated without serum (20 cases)	
Temperature, degrees	No. of determinations	Average plasma chloride, mg. per 100 c.c.	No. of determinations	Average plasma chloride, mg. per 100 c.c.
98	9	0.530	6	0.546
99	51	0.537	16	0.519
100	27	0.523	15	0.545
101	27	0.507	7	0.498
102	23	0.509	9	0.532
103	16	0.475	9	0.532
104	6	0.513	7	0.521

will be observed that serum *per se* did not appear to have any definite effect upon plasma chloride.

PROGNOSIS

Concentration of plasma chloride was correlated with prognosis. Hutchison² found no relationship between the excretion of chlorides and the severity of the disease in lobar pneumonia. Haden¹⁴ suggested that there may be a relation between the plasma chlorides and degree of toxæmia. Sunderman, Austin, and Camac⁴ were, however, unable to find such a relationship. It will be observed (Table IX)

TABLE IX
CASES OF LOBAR PNEUMONIA RELATED TO PROGNOSIS

Result	Number of cases	Number of determinations	Average plasma chloride, mg. per 100 c.c.
Cured	44	215	0.523
Died	7	16	0.487

that the average plasma chloride was definitely lower in the fatal cases than in the group that recovered. This relation was not observed in the cases of broncho-pneumonia (Table X).

TABLE X
CASES OF BRONCHO-PNEUMONIA RELATED TO PROGNOSIS

Result	Number of cases	Number of determinations	Average plasma chloride, mg. per 100 c.c.
Cured	18	84	0.559
Died	7	23	0.554

SUMMARY

Studies of the chloride content of blood plasma were made in cases of lobar pneumonia and of broncho-pneumonia.

In the cases of broncho-pneumonia there appeared to be a tendency towards a decrease of this blood constituent; the mean value corresponded with the lower level of the generally accepted normal range. There was a definite decrease in lobar pneumonia.

The lowest mean was observed in Type III of the disease.

No relationship was found between chloride content of plasma and the extent of the lesion. No investigation was made of the cases of broncho-pneumonia, because of the inherent difficulties of localization.

In the cases of lobar pneumonia, in general, the chloride content of the plasma varied inversely as the temperature. This relationship also appeared to hold in the cases of broncho-pneumonia, but was not so definite.

Plasma chloride did not appear to be affected by treatment with serum.

There was a definite relationship between plasma chloride and prognosis in the cases of lobar pneumonia. No such relationship was noted in the cases of broncho-pneumonia.

The above results are statistical conclusions. They, therefore, may not, and need not, necessarily, apply to any one given case.

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SOME PROBLEMS IN THE SURGICAL TREATMENT OF CARCINOMA OF THE INTESTINES*

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MY purpose is to emphasize some of the most important factors in the surgical treatment of carcinoma of the intestine. In the past, I think, our method of approach has been wrong. Too much stress has been laid on its occurrence late in life, and we have failed to realize as fully as we ought that no age is exempt. We have likewise placed too much emphasis on symptoms which occur late, when treatment is of little or no avail, and have failed to recognize the importance of the early manifestations when cure is possible.

There are four very important early symptoms.

First and most important is *any change in the intestinal habit of an individual previously healthy*. This may take the form of either constipation or diarrhoea. If the lesion is in the cæcum or ascending colon, diarrhoea is more likely to occur, but if beyond the hepatic flexure, constipation is the rule.

Secondly, *discomfort in the intestinal area*, especially if associated with an increase of flatulence and attacks of colicky pain, is very suggestive of a commencing obstructive lesion. And yet how frequently we find such symptoms spoken of, even by medical men, as "attacks of indigestion", a term which should never be used. "Indigestion" is merely a symptom, and no more a disease in itself than is cough or fever,

* Read at the Fifty-fourth Annual Meeting of the Ontario Medical Association, Toronto, May, 1934.

and yet how often we find patients suffering from carcinoma consoling themselves with the thought that it is only indigestion, until they are forced to recognize that they are the victims of a serious malady and, unfortunately, often beyond help.

Thirdly, *anæmia* of a secondary type, especially when it occurs in patients past middle life, is often one of the earliest indications of carcinoma of the cæcum or ascending colon.

Fourthly, *bleeding*, however slight, is always a danger signal. Even if examination reveals the presence of hæmorrhoids, we should not conclude that they are the source of the bleeding until we have excluded the possibility of malignant disease.

If we bear in mind these four symptoms we can forget about such things as alternating constipation and diarrhœa, loss of weight and strength, the presence of a tumour or the development of metastases. The general practitioner should constantly bear the early symptoms in mind. They occur at a stage when the case is in his hands, and it is a matter of the greatest importance that he should recognize their gravity and have every such case thoroughly investigated.

There is a growing tendency to resort to x-ray and laboratory methods, rather than spend time and effort in taking a careful history and making a proper physical examination. And yet I do not believe that the x-ray and laboratory, valuable as they are, should ever replace the history and physical examination. There are certain dangers associated with the use of the x-ray which are often not fully appreciated. If obstructive symptoms are present, however slight, the giving of a barium meal is usually contraindicated. A barium enema may be given, but in cases of suspected obstruction it should be thin, and the filling of the bowel carefully watched through the fluoroscope. If the barium is seen to end abruptly or trickle through a narrow canal to the bowel above it is positive proof of obstruction. The examination of the stool for occult blood is very important. Repeated examinations should be made, and the patient should be on a meat-free diet for at least three days before the examination is made.

Rectal and vaginal examinations are of value in carcinoma of the rectum and recto-sigmoid, but when the lesion is in the sigmoid or below the proctoscope and sigmoidoscope are the most

valuable instruments we possess. With them it is possible to see any gross lesion in the lower bowel, such as polypi, which should always be regarded as pre-cancerous, and to differentiate carcinoma from such diseases as ulcerative colitis and tuberculosis, both of which may be associated with bleeding. A normal mucous membrane in the rectum with blood coming from the bowel higher up is very suggestive of carcinoma of the sigmoid.

Blood sedimentation, after the method of Cutler, is a very valuable and simple clinical test. It is non-specific and does not diagnose any one disease any more than does the presence of leucocytosis or fever, but it does indicate the presence or absence of a serious lesion. So far as our present knowledge goes, the only physiological condition in which rapid sedimentation of the blood cells occurs is pregnancy. Apart from this, rapid sedimentation indicates that there is an increased destruction of tissue, and even in the absence of clinical symptoms demands thorough investigation to ascertain, if possible, the cause. If the cause cannot be found the patient should be kept under observation and examined periodically. A normal sedimentation rate indicates the absence of serious disease. Cutler,¹ in his original paper, states that in 5,000 observations only 5 with active serious disease gave a normal sedimentation rate. The test is valuable therefore on account of the fact that it serves to differentiate the seriously ill patient from one not seriously ill. It is simple and inexpensive, and can be made in the office or at the bedside, and definite information is available in an hour's time.

Next in importance to early diagnosis is adequate pre-operative and post-operative care. For pre-operative treatment all cases naturally fall into one of three classes: (1) those in which no obstruction is present; (2) those with mild symptoms of obstruction; (3) those in which complete obstruction is present. In cases without obstruction the treatment is comparatively simple. The patients should be hospitalized for at least three or four days. On admission, a mild laxative may be given, followed by irrigation of the colon twice daily with normal saline, except the day previous to operation, when the bowel should be kept as quiet as possible. A non-residue diet² should also be given, and that suggested by Rankin is most satisfactory. In the second class with mild symptoms of obstruction,

laxatives should not be given, otherwise the pre-operative care is the same as in the first class.

When obstruction is actually present, and especially if associated with vomiting, the case is much more complicated. These cases present three important symptoms not met with in other cases: (1) decrease in blood chlorides; (2) increase in the blood urea and non-protein nitrogen; (3) dehydration. No more dangerous procedure can be undertaken than to operate in the presence of obstruction without proper preliminary treatment. If complete obstruction is present some decompression operation must be resorted to, either in the form of an ileostomy, cæcostomy, or colostomy, depending on the part of the bowel involved.

In obstructive cases all nourishment must be withheld by mouth, and given intravenously or subcutaneously, or by both methods. Saline must be given in sufficient quantity to restore the blood chlorides. To provide sufficient nourishment glucose may be combined with the saline in 3 to 10 per cent solution, and should be given intravenously. If marked anæmia is present blood transfusion is indicated. In cases associated with vomiting gastric lavage should be done twice daily, and irrigation of the bowel should be carried out as indicated above.

The best time for operation is in the early morning, and spinal anæsthesia, unless contraindicated, is to be preferred.

The post-operative treatment is equally important but more uniform. Nothing should be given by mouth in cases where resection is done for at least four days, but the mouth should be kept moist and cleansed by frequent washing. Two to four thousand c.c. of normal saline, with 3 to 10 per cent glucose, should be given daily intravenously. If vomiting is present, gastric lavage should be done twice daily. Enemas should not be given for ten days, but a rectal tube may be inserted from time to time, and this will usually give the necessary relief. Sufficient morphia or heroin should be given to prevent restlessness and relieve pain.

Before going on to the case reports I should like to call attention to the relative frequency with which carcinoma occurs in the different parts of the intestinal tract, and to discuss briefly the underlying factors which necessitate a variation in the type of surgical treatment.

In 1919 Judd,³ of The Mayo Clinic, reported that a review of thousands of necropsies at various clinics showed that only 3 per cent of all the carcinomas occurring in the intestinal tract occurred in the small bowel. Mayo and Rankin⁴ in 1930 gave a further report, bringing it up to October 1, 1929. Between January 1, 1919, and October 1, 1929, carcinoma occurred in the small intestine 31 times as compared with 2,775 times in the large bowel and rectum, and 2,646 times in the stomach. Or, taking Judd's cases with those of Rankin and Mayo, there were 55 cases in the small intestine, 4,597 in the large bowel and 4,335 in the stomach. Why carcinoma should occur with so much greater frequency in the colon than in the small intestine has never been clearly determined. Difference in the chemical reaction and physical character of the intestinal content, the degree of mobility, and the presence or absence of constricted or fixed areas may be factors in determining its occurrence.

From the standpoint of practical surgery, however, the important thing to recognize is, that carcinomas of the small intestine, the right half of the colon, and the left half of the colon present three distinct surgical problems, due in great part to anatomical arrangement and physiological function. The blood supply of the small intestine is derived from the superior mesenteric artery and is extremely rich. For this reason resection in this area is a comparatively safe procedure, and an end-to-end anastomosis is the operation of choice. The right colon, including the ileo-cæcal valve to the middle of the transverse colon, also derives its blood supply from the superior mesenteric artery through its ileo-colic, right, and middle colic branches. Although much less richly supplied with blood than the small intestine, this whole area can be safely resected, and an end-to-side anastomosis made between the ileum and transverse colon. In making this anastomosis, if the longitudinal band of the transverse colon is split and the ileum implanted in the incision thus made one is able to create a condition very similar to the normal ileo-cæcal valve. If the carcinoma is fixed and its removal difficult, or if the patient's condition is poor, it is safer to do a two-stage operation. Dr. Lahey,⁵ of Boston, has devised a modified Mikulicz operation for removal of growths in

this area, which he uses in preference to the end-to-side anastomosis. It may have advantages in some cases, but, generally speaking, the end-to-side anastomosis of the ileum in the transverse colon is both a safe and satisfactory procedure. The left half of the colon does not lend itself to the same operative measures as the small intestine or right half of the colon. This is largely due to two factors: (1) Its blood supply, which is derived from the inferior mesenteric artery is relatively poor and its vitality very easily interfered with; (2) the intestinal contents at this point being of a more solid nature, greater strain is thrown on the site of operation, and leakage with infection is more likely to occur. For this reason an end-to-end anastomosis is attended with a high mortality and an obstructive type of operation will give more satisfactory results. The old Mikulicz type of operation is comparatively safe, but there is one grave objection to its use, and that is the danger of getting carcinoma transplanted to the wound. Some observers⁶ state that this occurs in about 12 per cent of cases. For that reason Rankin's modification⁷ of the Mikulicz operation is much to be preferred, on account of the fact that the lesion can be removed immediately and the danger of getting carcinoma transplanted to the wound is completely eliminated.

Carcinoma of the transverse colon may resemble either the right or left colonic type, but the tendency to the development of obstruction increases with proximity to the splenic flexure. The blood supply of this segment of the bowel is also relatively poor and its vitality is easily interfered with. End-to-end anastomosis is associated with a high mortality and an obstructive type of resection such as the modified Mikulicz of Rankin is usually the operation of choice. Owing to the comparatively rich lymphatic supply of the transverse colon and small intestine metastases tend to occur early, whereas in the right and left colonic areas the lymphatic supply is poor and metastases occur late. My case reports will be limited to the jejunum, ileum and colon as far as the recto-sigmoid.

CASE 1

A male, aged 37 years, referred by Dr. J. M. McCulloch with the following history. He had had typhoid in 1914, pulmonary hæmorrhage in 1914, after which he remained in bed for the greater part of three

years. He was well from 1917 until December, 1931, when he consulted Dr. McCulloch, complaining of gnawing pain in the epigastrium two hours after meals, associated with gas, acid eructations and occasional vomiting. The pain was referred down into the bowels. Physical examination at that time was negative and the symptoms were promptly relieved by an alkaline stomachic. He returned in March, 1932, complaining of the same symptoms as before, and was advised to have an x-ray examination. In April, 1932, he was given a thin barium drink, and an obstructive lesion was found in the upper part of the jejunum. He was sent to Nicholl's Hospital, and I operated on May 3, 1932. On opening the abdomen a nodular mass was found under the left costal margin, which proved to be an annular adeno-carcinoma of the jejunum about ten inches from its junction with the duodenum. It was primary in the jejunum, but the transverse colon was firmly adherent to the mass and definitely infiltrated by it. The whole mass was lifted out of the abdomen, about eight inches of the jejunum with the involved mesenteric glands resected, and an end-to-end anastomosis of the jejunum made. The mass with the involved portion of the transverse colon was then treated by the Mikulicz method. This man made an excellent recovery, has gained over thirty pounds, has perfect bowel function, and shows no sign of recurrence.

CASE 2

A female, aged 65 years, married, with three children; always healthy until November, 1932, when she developed typical attacks of biliary colic, with very severe pain radiating through to the back and up to the right shoulder and associated with vomiting. She was given the dye intravenously and the gall bladder x-rayed. There was practically no dye in the gall bladder, but there was an indistinct mottling very suggestive of stones. She entered Nicholl's Hospital on January 2, 1933, and was operated on on January 7th. At operation I found a large gall bladder with thickened walls and filled with stones. The common duct was patent and normal, but there was a hepatitis, grade two. The stomach, duodenum, pancreas and appendix were normal. I did a cholecystectomy, and she made a satisfactory recovery, except for occasional attacks of nausea and vomiting, which I attributed to her hepatitis.

After her discharge from the hospital these attacks continued to recur, and she developed in addition an occasional attack of diarrhoea. She was carefully dieted for some weeks, but as she was not improving satisfactorily I had her return to the clinic for further examination. Physical examination was negative. We gave her a thin barium drink, and discovered an obstructive lesion in what appeared to be the sigmoid. We then gave a barium enema and the diagnosis was confirmed. She was given belladonna for three days and then given another barium enema which confirmed the previous findings. She was re-admitted to the hospital six weeks after her discharge for the previous operation. On opening the abdomen I was surprised to find that the lesion was not in the sigmoid but in the ileum about two and one-half feet from the ileo-cæcal valve. It was lying in the left iliac fossa in direct contact with the sigmoid. As the patient had been very carefully prepared, I resected about ten inches of the ileum with the involved mesentery and glands and made an end to end anastomosis by the aseptic method⁸ of Rankin. She made an uneventful recovery and was able to leave the hospital on the sixteenth day. She has gained 36 pounds, has normal bowel function, and is apparently perfectly well.

CASE 3

Columnar-celled carcinoma of the cæcum. A female, aged 67 years, always healthy until two months previous to admission to the hospital. Her friends noticed that she was getting very pale and she noticed that she tired more easily than usual.

On admission she had a marked anæmia of a secondary type, and physical examination revealed a mass in the right iliac region very suggestive of malignancy. She had a slight diarrhœa and occult blood was found in the stool. At operation a large tumour was found in the cæcum, the glands were enlarged up to the liver, but no metastases were visible or palpable in the liver. The terminal ileum, cæcum, ascending colon and hepatic flexure were resected and an end-to-side anastomosis of the ileum in the transverse colon made. Her recovery was uneventful and she was able to go home on the seventeenth day. She remained perfectly well for over a year, then developed metastases in the liver and died.

CASE 4

Papillary adeno-carcinoma of the sigmoid. A female, aged 42, school teacher, was suddenly seized with very violent pain in the left lower quadrant of the abdomen on the evening of March 1, 1933. She had taught school that day and had taken her supper as usual. Shortly after the evening meal she was seized with the violent pain referred to, and Dr. Dobson was called. I saw her with him in consultation. She was suffering intense pain and had that board-like rigidity characteristic of perforation. Our diagnosis was acute perforation of the bowel and immediate operation advised. She was taken to the Nicholl's Hospital and an opening made in the mid-line below the umbilicus. About one and a half pints of fluid intestinal contents was found free in the peritoneal cavity, and an irregular mass about the size of a large orange could be felt in the left side of the pelvis. A split muscle incision was made in the left iliac region and the mass exteriorized through it, and on further examination a punched-out perforation was found almost directly opposite the mesenteric attachment. The peritoneum was quickly cleansed, a tube drain inserted in the pelvis, and the abdomen closed. The involved portion of the intestine with its mesentery was excised by the Mikulicz method. The colostomy wound did not close spontaneously, and at a second operation for closure a well defined implantation carcinoma was found in the abdominal wall at the site of the wound. This was widely excised, and the closure made in the usual manner. The wound healed without difficulty, the bowel has since functioned normally, and she has taught school continuously during the past year, and has gained 32 pounds.

On May 1, 1934, she returned for examination, and I found a recurrence of the carcinoma in her abdominal wall.

The cases reported indicate some of the problems met with in the surgery of this part of the intestinal tract. The first furnishes a good example of the modification of technique required in dealing with lesions of the small bowel and transverse colon, an end-to-end anastomosis being the operation of choice for the small bowel, but for the transverse colon this is not a safe method and an obstructive type of operation is to be preferred. The second indicates the need of being constantly on the lookout for multiple lesions. The third presents a very common onset in carcinoma of the cæcum and ascending colon, in which anæmia and diarrhœa were the initial symptoms. The fourth indicates that carcinoma of the sigmoid may be practically symptomless until obstruction and even perforation occurs. It also indicates the danger of getting a transplantation carcinoma in the wound with the old Mikulicz operation and the great value of Rankin's modification.

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INSULIN SUBSTITUTES FOR ORAL ADMINISTRATION.—

R. Pepperkorn has found synthalin B one of the best of the many attempts to produce a substance which, given by the mouth, can replace hypodermic injections of insulin. This preparation is useful in light and moderately severe cases, but the patient often tolerates it badly, reacting with anorexia, vomiting, diarrhœa, etc. It is particularly the young or middle-aged diabetic who reacts thus, the elderly diabetic as a rule tolerating synthalin B better. For over a year the author has treated some 130 diabetics under hospital and ambulatory conditions with a new preparation, "omalkan," prepared by Fresenius of Frankfort. Its most important constituent is decamethylene-diguanidin phosphate. It is made into a pill with powdered pancreas, yeast (formerly much used as a remedy for diabetes), rhizoma galangæ, sodium glycocholicum, and syzygium jambolanum. This pill

reduces the sugar content of both blood and urine, the latter being completely freed from sugar in certain cases. It takes at least a week for the full effect of omalkan to make itself felt. It is, as a rule, well tolerated. To promote toleration, it is advisable, in moderately severe cases of diabetes, to supplement this preparation at the outset by a carefully controlled antidiabetic diet as well as by insulin, whose place is taken, step by step, by omalkan. In this way, and in suitable cases, twenty units of insulin can be replaced by omalkan; and in twelve of the author's cases he succeeded in substituting omalkan for more than twenty insulin units. No ill effects followed the exhibition of omalkan even when it was given daily for months, during which no addiction to it was acquired. The author considers it a valuable drug in diabetes.—*Deut. med. Woch.*, October 26, 1934, p. 1629 (Abs. in *Brit. M. J.*)

IRRADIATED CHOLESTEROL IN THE CURE OF HUMAN RICKETS*

(A PRELIMINARY COMMUNICATION)

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IN 1918 Mellanby¹ demonstrated the antirachitic effect of cod liver oil, and suggested that this antirachitic effect was due to vitamin A or a vitamin with a similar distribution. McCollum *et al.*,² in 1922, showed that the antirachitic effect of cod liver oil was due to a separate and distinct vitamin, and called it vitamin D. Almost simultaneously Steenbock and Black³ and Hess,⁴ in 1924, found that exposure of certain foods to ultraviolet rays produced in those foods vitamin D. Later, in 1928, evidence was produced⁵ that this effect was the result of the action of the ultraviolet rays on minute traces of ergosterol in the food. Shortly after this pure ergosterol was irradiated, suitably diluted in oil, and since then has been made available to the medical profession under the name "viosterol". During the past year Waddell⁶ has irradiated pure cholesterol and found that the resultant product had a marked antirachitic effect on rats and chickens.

At the present time there is evidence that there may be no less than four, and possibly six, chemical substances, each with a different vitamin D effect. The antirachitic potency of viosterol (irradiated ergosterol) as measured on chickens is only about one-fiftieth that of cod liver oil, unit for unit.⁷ Bills, Massengale and Imboden⁸ have reported that blue fin tuna liver oil, unit for unit, has about one-sixth the antirachitic effect on chickens of cod liver oil. On the other hand, Waddell's irradiated cholesterol was just as effective in the cure of rickets in chickens as cod liver oil.⁶ Yoder⁹ has reported that cholesterolene sulphonic acid has antirachitic properties when fed to rats. Its action however is apparently different from the vitamin D of irradiated cholesterol. From work on human beings Hess¹⁰ has suggested that the vitamin D in irradiated milk is a different substance from the vitamin D in cod liver oil, although recent work by us¹¹ does not substantiate this suggestion.

* From the Department of Pædiatrics, University of Toronto, and the Hospital for Sick Children.

From the above it is evident that the vitamin D produced by the irradiation of ergosterol (viosterol) and the vitamin D in blue fin tuna liver oil are not identical with each other or with the vitamin D of cod liver oil. Cholesterolene sulphonic acid appears definitely different from these three, thus making four substances with different vitamin D effects. Whether the vitamin D of irradiated cholesterol and of irradiated milk are identical with that of cod liver oil has not yet been demonstrated.

The medical profession, although interested in the above facts from an academic standpoint, is more concerned with the antirachitic effect of these different types of vitamin D in human beings. It has usually been considered that the vitamin D units of viosterol are only about one-half as effective as the cod liver oil units. In order to get the same beneficial effect it is necessary to give about twice as many D units in viosterol as in cod liver oil. (Three teaspoonfuls of commercial cod liver oil contain about 1000 international vitamin D units and 10 drops of 250D viosterol about 2500 units). Further evidence is required however, and it may still be shown that viosterol is as effective as cod liver oil, unit for unit, in the prevention of infantile rickets. The effectiveness for human beings of vitamin D in irradiated milk has been found to be at least that of cod liver oil.¹¹

No observations have yet been reported of the effectiveness on infants of vitamin D in the form of irradiated cholesterol. In view of the possible future importance of this product to the medical profession, the following observations on two infants are of interest.*

CASE 1

Born July 7, 1934; birth weight 3 pounds 15 ounces. The baby was first observed on November 2nd, aged

* We realize that this report contains observations only on two infants, yet the results are very clear-cut. If we had waited until more were included it would delay the report for one year, as observations on the cure of rickets during the spring months are not acceptable owing to the tendency to spontaneous improvement.

4 months; weight 10 pounds 2½ ounces. Clinical examination showed moderate craniotabes and slight enlargement of the costochondral junctions. The x-ray (Fig. 1) showed no evidence of rickets. The infant was on a diet of non-irradiated evaporated milk with added carbohydrate. On January 18, 1935, the patient was six and a quarter months old and weighed 16 pounds 4 ounces. The food was 14 ounces of non-irradiated evaporated milk, with orange juice and farina. Clinical examination showed slight costochondral enlargement and

old and weighed 16 pounds 5 ounces. The skiagram taken on this date showed the cure of the acute rickets by the daily administration of 750 international vitamin D units of irradiated cholesterol over a period of seven weeks.

CONCLUSION

The daily administration of 750 international vitamin D units of irradiated cholesterol (equiv-

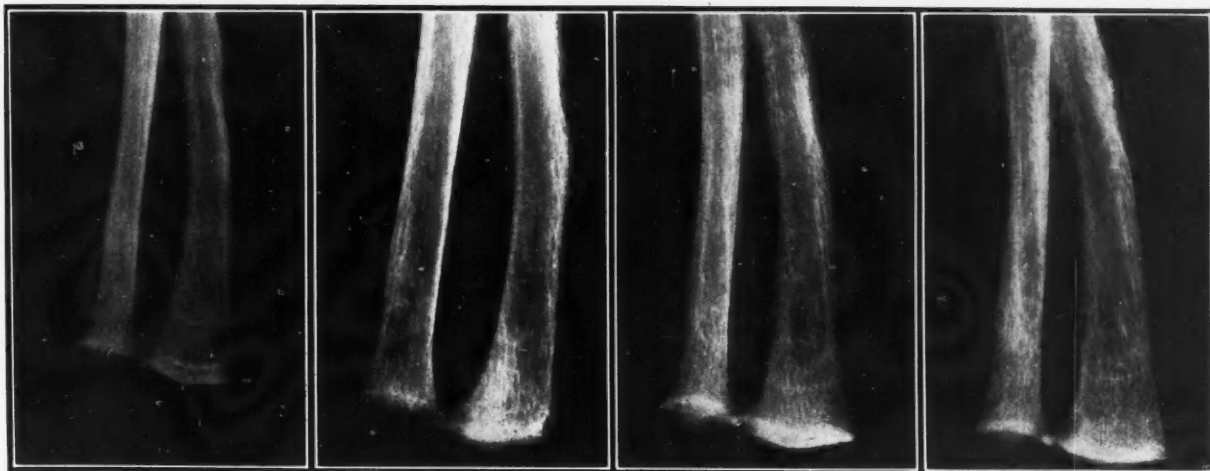


FIG. 1

FIG. 2

FIG. 3

FIG. 4

exceedingly marked craniotabes. The x-ray (Fig. 2) showed acute rickets. Commencing on January 21st, without any change in diet, 750 international vitamin D units of irradiated cholesterol dissolved in 10 drops of corn oil were mixed with one of the daily feedings. The x-ray (Fig. 3), taken two weeks later, February 6th, showed a good deposition of new bone. On March 13th, the infant was eight months of age, weighed 19 pounds 10 ounces, and the craniotabes had disappeared. The x-ray taken on this date, (Fig. 4), after irradiated cholesterol had been administered for seven weeks, showed good healing of the rickets.

CASE 2

A child born on August 3, 1934; birth weight 4 pounds; first observed on October 30th, aged 3 months; weight 11 pounds 3 ounces. The infant was on a feeding of 24 ounces of 2 per cent lactic acid milk with added carbohydrate. At that time no evidence of rickets was found on physical or roentgenological examination. The infant continued on the same feeding without the addition of any source of vitamin D. The second observation was made on January 16th. The infant's age was five and a half months, and it was gaining in weight on a feeding of 35 ounces of 2 per cent lactic acid milk with added carbohydrate. No craniotabes nor epiphyseal or costochondral enlargement were found on clinical examination. The skiagram of the wrist showed the typical flaring, cupping and moth-eaten appearance of acute rickets. Commencing on January 21st, 750 international vitamin D units of irradiated cholesterol, dissolved in 10 drops of corn oil, were added directly to one of the feedings each day. No other change in the diet or environment was made. The skiagram taken February 6th, two weeks later, showed a definite laying down of new bone. The antirachitic treatment was continued at the same level, and the skiagram taken February 20th showed further deposition of new bone. On March 12th the infant was seven and a quarter months

alant in rat units to 3 drops of 250D viosterol or 2 teaspoonfuls of a good grade of commercial cod liver oil) to each of two rapidly growing prematurely-born infants produced rapid healing of acute rickets during the winter months.

The authors are indebted to J. Waddell for preparing and furnishing the irradiated cholesterol.

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TYPES OF MALIGNANT DISEASE TREATED BY RADIUM AT THE CANCER RELIEF AND RESEARCH INSTITUTE IN MANITOBA*

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ABOUT three years ago the Cancer Relief and Research Institute of Manitoba began to supply radium for the treatment of malignancy. A few requests for the element in needles, plaques and tubes were acceded to as early as February, 1931, but an extensive supply of the element and radon emanation was not available until April. The office and emanation plant are housed in the Medical College and the radium is dispensed to the hospitals for use by the surgeons who are on a list approved by the treatment committee, of which Dr. Gordon Fahrni is chairman.

During the three-year period until March 31, 1934, the Institute has supplied just over 1,000 treatments for 836 patients suffering from the following conditions:

TABLE I

	Cases
Carcinoma of lip	87
Carcinoma of tongue	22
Other intraoral carcinomas	59
Epithelioma of skin	27
Rodent ulcer of skin	87
Non-malignant skin lesions	126
Benign menorrhagia	145
Carcinoma of cervix uteri	148
Carcinoma of body of uterus	20
Vulva and vagina	20
Breast	39
Other malignant tumours	56
Total	836

Not all of these groups can be profitably classified. The epitheliomas of the skin which have been treated vary so enormously in duration, site, size and grade of malignancy that they do not lend themselves to a helpful study in a short space of time. Also many of the basal-cell carcinomas have not had a preliminary biopsy, and so in a detailed consideration of these lesions some are not on the certain basis that

one would desire. Even when all the clinical characteristics of rodent ulcer are present, microscopic examination occasionally shows the structure of the much more malignant epidermoid carcinoma.

Most rodent ulcers are on the face, and fear of disfigurement may deter one from taking a biopsy. A trustworthy microscopic diagnosis of basal-cell carcinoma may be made on a smaller piece of tissue than is required for any other type of skin malignancy. A small piece of tissue, several millimetres across, removed under local anæsthesia from the base of the ulcer by means of a biting forceps will usually provide a satisfactory microscopic diagnosis of rodent ulcer, and entails no appreciable disfigurement. Larger portions of tissue are desirable for the diagnosis of other types of malignancy.

Most of the non-malignant skin lesions treated by radium were under the care of Dr. Hugh MacKay, who has made an extensive study of the use of radium in dermatology. For more than fifteen years he has been applying radium to papillomata, nævi, keratoses and leukoplakias with excellent results. He employs very small, repeated, superficial doses with variable screening.

Radium is considered a valuable means of treating persistent benign menorrhagia, sometimes called fibrosis uteri. One small dose, such as 50 milligrams for 12 hours, will usually arrest an exhaustive menorrhagia. The larger doses, up to 1,200 milligram hours, establish a permanent amenorrhœa in a high percentage of cases. A preliminary diagnostic curettement, to exclude malignancy, is important. The treatment is attended by a minimum of danger and disability to the patient, and the percentage obtaining good results is high. Later in this review cancer of the cervix will be considered in greater detail.

* A paper read at the Sixty-fifth Annual Meeting of the Canadian Medical Association, Calgary, June 21, 1934.

The number of cases diagnosed as carcinoma of the body of the uterus is high. Recently there has been a move to question the degree of malignancy of some of the less infiltrative endometrial adenocarcinomas. The difficulties of diagnosis are great. Benign polypoid endometritis may at times present a microscopic picture resembling malignancy. Superficial papillary adenomas usually run a slow and relatively benign course, but some areas may resemble the malignant adenoma. Adenocarcinoma may be detected in a polyp, which is removed with a curette, and when the uterus is later removed no further adenocarcinoma is found. In cases of carcinoma of the body of the uterus treated by radium from the Manitoba Cancer Institute nearly all have had a subsequent hysterectomy performed. In carcinoma of the vulva and vagina the benefits of radium and roentgen ray were sought because the results obtained by surgery alone are far from favourable. Not enough time has elapsed to determine whether the radiation has been of any material aid in arresting the malignant invasion.

Many of the cases of cancer of the breast were in a very late stage when radium was used. Most of them had had a previous radical amputation, and roentgen ray radiation was given either immediately before or following the radium.

The 56 other malignant tumours in which radium was used were made up of glioma of the eyeball, astrocytoma of the cerebrum, sarcoma of the nasal septum, Ewing's tumour, myxosarcoma and carcinoma of the rectum. Surgical excision was usually first performed and radium deposited in the wound. Sometimes radium and roentgen rays were used as a preliminary to excision. These are too varied in classification, location and mode of treatment to be systematically grouped and classified, and their consideration singly requires more space than is now available.

From the beginning of 1932 the writer has been acting as registrar, working under the direction of the treatment committee. Since this date when radium is sent out from the Institute a blank history abstract (see form inserted*), the type approved by the American College of

Surgeons, is attached to each order of radium. A summary of the patient's history is written on this form and it is sent back to the Institute where two typed copies are made; one for the records of the hospital where the patient has been treated and the other for the surgeon's own office records. As a hospital record this abstract form cannot in itself take the place of a full history, but to one acquainted with its format a glance over it acquaints him with the salient features of a case. It forms an excellent record for later reviewing results for the preparation of papers. A file of these forms in a surgeon's office of all malignant cases he has had under his care, both private and public, is a convenience and a recompense for the labour of filling in the sheet when the patient is treated.

Let us now consider some features of the patients who received radium treatment during the 1932-1933 period.

TABLE II

Carcinoma of Lip, 45 Cases

Interval from initial sign to first treatment, average in months 13.8; range 1 to 60.
Size of tumour on lip on entrance, average in centimetres 1.63; range 0.5 to 7.5 x 3.
Palpable lymph nodes on entrance, 12 cases.
Died within the 2-year period from cancer, 3 cases.

In considering the 45 cases of carcinoma of the lip treated, the average interval of 13.8 months between first noticing the lesion and the application of treatment leaves much to be desired. Patients receiving any previous treatment, such as previous excision or x-ray, are excluded from this calculation. I am also excluding one patient who led a solitary existence in an isolated district and watched a cancer grow on his lip for 14 years, because this man's mental make-up was unusual and he had no intimates to urge treatment on him. When he came to the Winnipeg General Hospital clinic the whole lower lip was a fungating mass, 7.5 x 3 cm., and the submaxillary lymph nodes showed secondary deposits.

Biopsy was performed in 20 cases and showed 11 in Grade II and 9 in Grade I.

In general the plan of radium therapy is patterned after that employed at the Memorial Hospital for Cancer and Allied Diseases in New York. It will be outlined more fully in considering the other intraoral cancers.

* There are other special forms for cancer of the uterine body, bladder, breast, lip, stomach, etc.

Abstract Record Sheet (B)
Carcinoma of Cervix

CLINIC

Name or Initials of Patient:

Name of Family Physician:

FAMILY HISTORY OF CANCER

PAST HISTORY

Series No.
Class

City

Age

Hospital No.

Date of Entrance

Menopause

Pain

Catamenia: Frequency

Duration

Children

Puerperal Lacerations

Miscarriages

Previous Operations

Wassermann

PRESENT HISTORY

SYMPTOMS OF ONSET: Date

Nature

Date of first consultation with physician

Advice received

Treatment before entrance

SYMPTOMS AT ENTRANCE:

Hæmorrhage

Leucorrhœa

Pain

Other symptoms

Other Complicating Conditions

RESULT

5 years

ENTRANCE EXAMINATION

LOCATION AND EXTENT OF DISEASE

Cervix

Uterine cavity

Vaginal wall

Parametrium

Broad ligaments

Bladder

Rectum

Fistula R. V.

Fistula V. V.

Iliac lymph nodes

Remote metastases

Type of Disease:

Date

a. Operative fatality

b. Alive and well

c. Untraced and inconclusive

d. Alive with recurrence

e. Died with recurrence

f. Died without recurrence

Recurrence

Date

Where?

Remote metastases

Fistula R. V.

Fistula V. V.

Iliac Lymph Nodes

Pain

Hæmorrhage

Leucorrhœa

Time elapsed since onset

Time since treatment

Treatment: Radical Hysterectomy

Hysterectomy

Cautery

Radium

X-Ray

Biopsy

Pathologist

Date

Uterus

Parametrium

Gross Exam.

Micros. Exam.

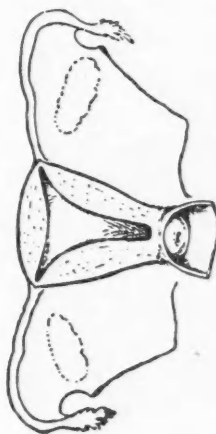
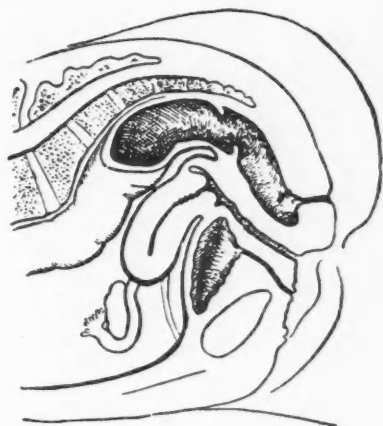
Glands

Recurrence

RADIUM	Alone		Before Hysterectomy		After Hysterectomy		With Cautey		After Cautey	
	Date	Form	Screening	Location	Distance	MC or MG	Hours	Total MC Hours	Size of Field	Total MC Hours
1st Treatment										
2nd Treatment										
Total No. of Treatments										
X-RAY	Date	K.V.	Filter	Location	Distance	M-Amp.	Hours	Total M-Amp. Hrs.	Spark Gap	Total MC Hours
1st Treatment										
2nd Treatment										
Total No. of Treatments										
OPERATION	Date									
Operative Findings										
CAUTERIZATION										
Details of Entrance Examination										
CLASSIFICATION										
1. Primary case.										
2. Recurrence in vaginal wall following panhysterectomy for cancer.										
3. Recurrence deep in pelvis following panhysterectomy.										
4. Carcinoma of cervix following supra-cervical hysterectomy.										
STAGES										
1. Disease limited to cervix. Uterus mobile.										
2. Disease spreading into fornices with or without infiltration adjacent to uterus. Uterus partially mobile.										
3. a. Nodular infiltration of parametria extending to wall of pelvis, with limited mobility of uterus or massive infiltration one parametrium with fixed uterus.										
b. Superficial infiltration of large part of vagina with mobile uterus.										
c. Isolated metastases in pelvic glands with relatively small primary growth										
d. Isolated metastases in lower part vagina.										
Duration										
Anesthesia										
Vaginal										
Abdominal										
Radical Hysterect.										
Ureters										
Glands										
Total M-Amp. Hours										
Metal of Target										
Roentgens (r-units)										
Size of Field										
Spark Gap										
Total MC Hours										
After Cautey										

Technique

Diagrams



4. a. Massive infiltration of both parametria extending to walls of pelvis.
b. Disease involving bladder or rectum.
c. Whole vagina infiltrated, or one vaginal wall entirely infiltrated with fixation of primary growth.
d. Remote metastases.

1. Disease limited to cervix. Uterus mobile.
2. Disease spreading into fornices with or without infiltration adjacent to uterus. Uterus partially mobile.
3. a. Nodular infiltration of parametria extending to wall of pelvis, with limited mobility of uterus or massive infiltration one parametrium with fixed uterus.
b. Superficial infiltration of large part of vagina with mobile uterus.
c. Isolated metastases in pelvic glands with relatively small primary growth
d. Isolated metastases in lower part vagina.

While it is too soon to speak about cures, the impression given by the early results obtained is favourable. Four recurrences after a previous surgical excision healed up well with radium. The cosmetic results following radium treatment are somewhat better than those obtained by surgery. In the three deaths recorded two are cases of three years' standing and had lymph-node involvement at the time of treatment; one had electric treatment of some sort by an irregular; the other had a previous excision. The third, a man of 53 years, was in poor general physical condition and had a positive Wassermann reaction. Although he stated the lip lesion was only of four months' duration it had attained the large size of 2 x 6 x 4 cm. Biopsy showed a Grade II epidermoid carcinoma.

In the lip cases there is an average period of 13.8 months, during which time the patient watched the lump grow before he finally decided to have it treated. Occasionally a physician is at fault in temporizing with a carcinoma of the lip, but this is a minor source of delay. The great responsibility for this delay rests almost wholly on the patients themselves. As soon as they entertain any suspicion of having a cancerous growth, they seem to feel that avoiding treatment entitles them to hope that they have not got the disease, whereas seeking and submitting to treatment is an irrefutable admission that they have cancer. Now the average person believes that cures of cancer are so rare that they are almost miracles. When a person dies from cancer the cause of death is common knowledge, whereas if a patient is cured by surgery or radium there appears to be a conspiracy of secrecy about the whole affair. Often, to prevent him worrying, the patient is not told the diagnosis, and when he recovers the family maintain the secrecy to prevent him worrying about a recurrence. Again many realize that if it be known among his friends that a person had cancer it may react unfavourably on his business or social relations. All this prevents people from knowing that 90 per cent of cancers of the lip can be cured either by surgery or radiation; that treatment as soon as the lesion is noticed would even produce a higher percentage of cures, and putting off treatment until the disease invades deeply lessens the chances of cure. The curability of accessible cancers in their early stages should be common knowledge,

and the medical profession are the logical agents for the dissemination of this information.

TABLE III

Cancer of Tongue, 15 Cases

Interval from initial sign to first treatment, average, 4½ months; range 0 to 12 months.
Size of tumour on entrance, average, 2.2 cm.; range 0.5 to 4 cm.
Palpable cervical lymph nodes on entrance, 8 cases.
Died within the 2-year period from cancer, 5 cases.

In cancer of the tongue we are dealing with a more malignant process. The long average interval of 4½ months between the initial sign and the first treatment, the large average tumour size of 2.2 cm., and the palpable cervical nodes in 8 cases out of 15, show plainly that in most of these cases the opportunity for effective treatment was past. Five of them noticed a painless lump as the initial sign. The others complained of pain or irritation as the earliest symptom. All except three had biopsies, 6 showing Grade III, 4 showing Grade II, and 2 showing Grade I epidermoid carcinoma.

TABLE IV

Cancer of the Pharynx and Tonsil, 10 Cases.

Interval from initial symptom to first treatment, average, 4 months; range 0 to 12.
Size of tumour at time of first treatment, average 3 cm.; range 0 to 5 cm.
Four had enlarged cervical lymph nodes.
Initial symptom or sign:
6 had persistent pain in throat;
1 had dyspnoea and dysphagia;
1 had nasal obstruction and deafness developing for 3 years;
3 first noticed a painless cervical swelling.
Five died from cancer within the 2-year period.

The 10 cases of cancer of the pharynx and tonsil tell a somewhat similar story, but the clinical diagnosis in these cases is more difficult than the diagnosis of cancer of the anterior part of the tongue. Careful rhinological examination is of the greatest value here. The age is significant. The youngest in the group is 39; five were between 50 and 60; two were between 60 and 70; and two between 70 and 80. The lack of signs of inflammation should raise the question of malignancy in the physician's mind. The grade of the malignancy was generally higher, and two with tonsillar lesions had lymphosarcomas. One tumour arising primarily

in the fossa of Rosenmüller, and producing great cervical lymph node enlargement, proved on biopsy examination to be a reticular-cell lymphosarcoma.

The grading of intra-oral and lip epitheliomas according to Broders' method gave only a rough index of the rapidity of the malignant extension.

Fig. 1 shows characteristic examples of the four grades. Grade I on the extreme left shows the slow growing radio-resistant form for which excision is usually advised. It shows well-developed cell nests of keratinized cells, with a basement layer surrounded by abundant connective tissue containing inflammatory

round cells. In the rapidly growing Grade IV, on the extreme right there is little or no connective-tissue stroma. The cells are densely packed together, and many show the jet black irregularly-shaped mitotic nuclei. This is a most malignant type of tumour, but it responds more favourably to radiation than the lower grades. The patient suffering from this type often develops distant metastases. Grade II and Grade III are intermediate between I and IV.

In remembering the percentage of the various grades in different locations a graph might assist, with the grades on the base line and the percentages on the upright. The percentages of each may be covered by a line drawn from

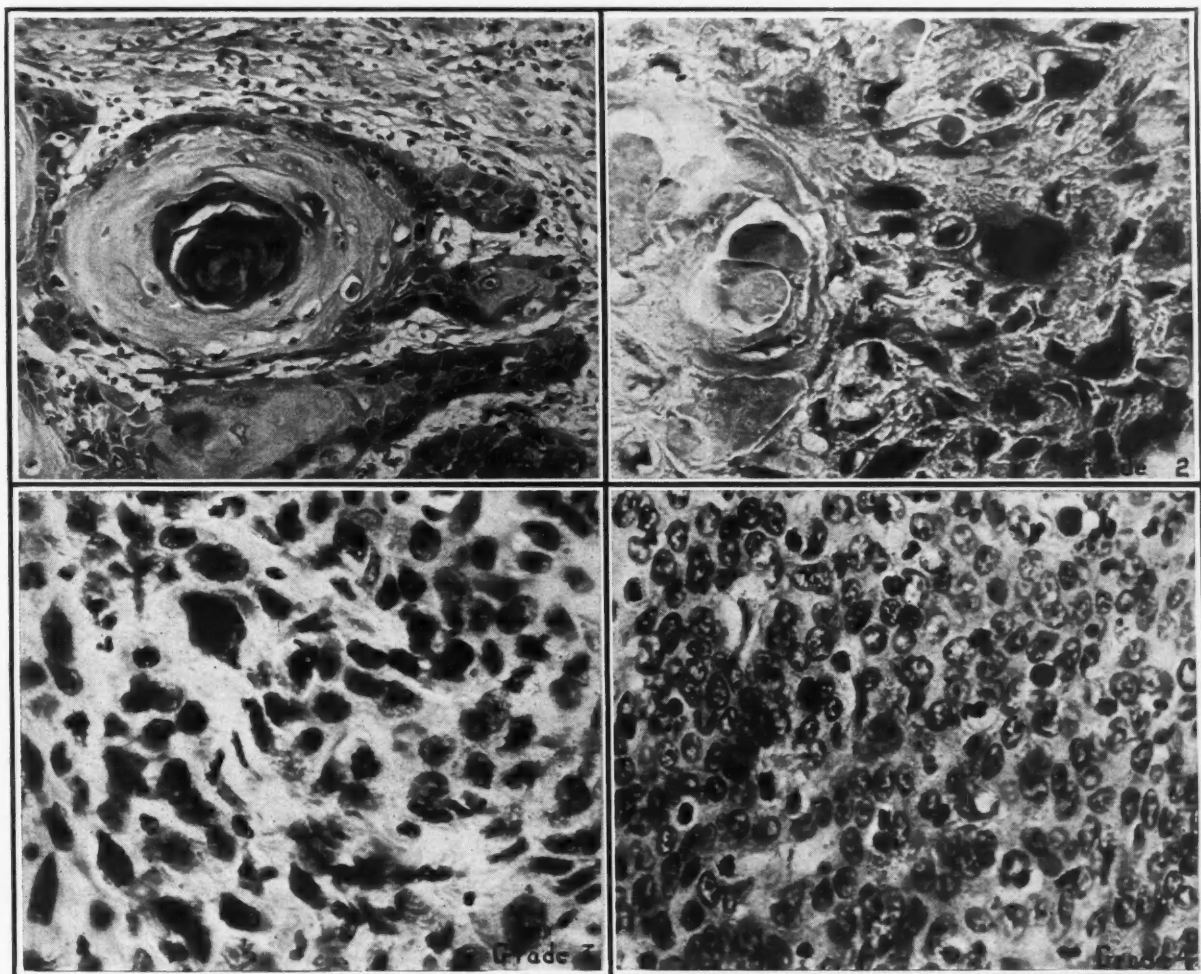


FIG. 1.—Grades of epidermoid carcinoma. Broders' classification from Boyd's Textbook of Pathology, 2nd edition. Grade 1 at the left above shows complete differentiation characterizing the less malignant growths. Grade 4, lower right, shows extreme anaplasia found in extremely malignant tumours.

CRITERIA OF GRADING

Grade	Cell nests	Keratinized cells	Squamous cells	Prickle cells	Variations in cells and nuclei	Hyperchromatic nuclei	Mitoses	Large nucleoli
1	+++	+++	+++	0	0	0	0	0
2	+	+	++	+++	++	+	+	+
3	0	0	0	+	++	++	++	++
4	0	0	0	0	+++	+++	+++	+++

66 per cent at Grade I to 1 per cent at Grade IV. Back in the mouth the high percentages are in the higher grades being equally divided between III and IV in the pharynx.

As most of the surgeons who treated the patients described follow the system employed by the Memorial Hospital, N.Y., the dosage of radium is computed according to the following Table.

TABLE V.
MILLCURIES IN GOLD SEEDS REQUIRED
TO DELIVER SPECIFIED DOSES TO MASSES
OF VARIOUS DIAMETERS

Skin Erythema Doses	Diameter of Mass—Centimetres													
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0		
	Number of Millicuries													
1	0.2	0.5	0.8	1.5	2.0	2.4	2.9	3.4	4.0	5.4	7.0	9.0		
2	0.4	1.0	1.6	3.0	4.0	4.8	5.8	6.9	8.0	11	14	18		
3	0.6	1.5	2.4	4.5	6.0	7.2	8.7	10	12	16	21	27		
4	0.8	2.0	3.2	6.0	8.0	9.6	12	14	16	22	28	36		
5	1.0	2.5	4.0	7.5	10	12	14	17	20	27	35	45		
6	1.2	3.0	4.8	9.0	12	14	17	20	24	32	42	54		
7	1.4	3.5	5.6	10	14	17	20	24	28	38	49	63		
8	1.6	4.0	6.4	12	16	19	23	27	32	43	56	72		
9	1.8	4.5	7.2	14	18	22	26	31	36	49	63	81		
10	2.0	5.0	8.0	15	20	24	29	34	40	54	70	90		
11	2.2	5.5	8.8	17	22	26	32	37	44	59	77	99		
12	2.4	6.0	9.6	18	24	29	35	41	48	65	84	108		
13	2.6	6.5	10	20	26	31	38	44	52	70	91	117		
14	2.8	7.0	12	21	28	34	41	48	56	76	98	126		
15	3.0	7.5	13	23	30	36	44	51	60	81	105	135		

A Grade II epidermoid carcinoma requires 10 skin erythema doses, two of which may be supplied by x-ray, leaving eight to be given from radium. If the tumour is 2.5 cm. in diameter it requires 12 millicuries to produce 8 skin erythema doses. A number of the patients did not receive x-ray treatment.

Let us now consider carcinoma of the cervix uteri, a disease pre-eminently suited to radiation therapy. At the suggestion of Dr. J. D. McQueen I have divided cases receiving treatment from the Institute into four stages, using the international classification, (Fig. 2). This

is really an attempt to classify cases into early and late disease. The black areas on this diagram are Dr. McQueen's interpretation of the degree of malignant involvement in various

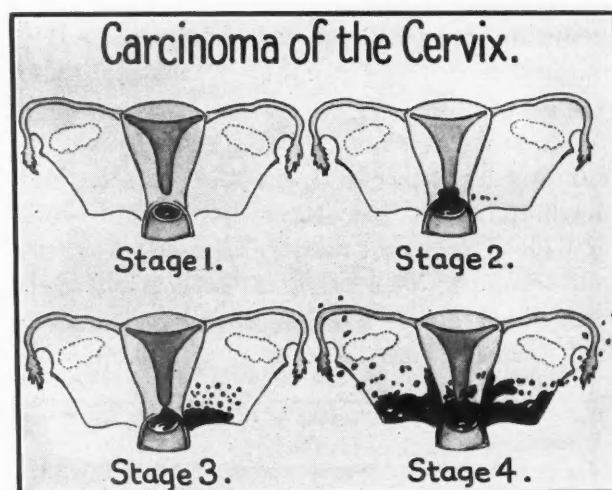


FIG. 2.—Diagrammatic representation of the four stages (international classification) of cancer of the cervix. Malignancy, shown in jet black, is limited to the cervix in Stage 1 and very extensive in Stage 4.

stages. Stage 1 is entirely localized to the cervix, whereas Stage 4 represents the advanced hopeless type with malignant invasion of all the surrounding structures.

TABLE VI
CANCER OF CERVIX
1932 AND 1933

		Stages			
Age		1	2	3	4
31-35	1	-	2	-	3
36-40	5	4	3	1	13
41-45	9	4	6	-	19
46-50	5	9	4	1	19
51-55	2	4	2	2	10
56-60	3	3	4	1	11
61-65	9	1	2	4	16
66-70	3	3	1	1	8
71-75	-	-	-	-	-
76-80	-	1	-	-	1
Total	37	29	24	10	100
Died within 2-year period	7	10	14	3	34

Out of the ten patients in Stage 4 it is almost unbelievable that the first symptom in four instances appeared within the previous two months. An average of the time elapsing between the first symptom and treatment is untrustworthy because in two cases a heavy leucorrhœal discharge, blood-stained at times, appeared as long as five years previously. The patients could not be sure about the date of onset, nor could they say if at any time there

had been an abrupt change in the character of the discharge which usually marks the early development of a carcinoma.

Carcinoma of the cervix is in many instances able to develop to an advanced stage without producing enough symptoms to disturb the patient. It is commonly regarded as a disease of patients over forty, but examination of Table VI shows that 13 per cent occurred in patients between 36 and 40 years of age. Bleeding which is one of the important signs in patients past the menopause loses its diagnostic significance in these younger patients. In one instance the family physician regarded the warning sign of bleeding in a woman 41 years old as a miscarriage, and failed to make an examination until 4 months after the onset of the initial symptom. By this time the carcinoma was in Stage 3. On the whole any blame for delay in treatment attributable to the doctor was more often from failure to make an examination than it was from failure to recognize early lesions when the examination was made. One of the cases classed as Stage 3 occurred during pregnancy. From the fifth months onwards this woman had bleeding that suggested placenta prævia, but examination revealed a friable mass on the posterior lip which showed a Grade III carcinoma, probably radio-sensitive. She was delivered by Cæsarean section, and then given intensive x-ray treatment, after which a total of 6450 milligram hours of radium were applied over a period of a year. The disease steadily progressed and she died 14 months later.

One of the fatal cases listed in Stage 1 was a woman of 32, with the following history. In April, 1932, she had had a careful pelvic examination and was considered normal. On June 24th she developed continuous vaginal bleeding. On July 15th re-examination showed a large fungating mass attached to the cervix, which on microscopic examination showed a very anaplastic Grade IV carcinoma. Intensive radium and x-ray therapy were given. She died on Christmas day, and post-mortem examination failed to reveal any trace of cancer in the uterus, which was atrophic. There were large metastases in the mesenteric glands, liver and stomach.

A compilation of the average dose of radium in the various stages is difficult to tabulate

briefly because some surgeons followed the Stockholm treatment requiring repeated applications at short intervals, while others gave a larger dose at the first treatment. From a standpoint of treatment all cases are regarded as Stage 3; even if on clinical examination they appear to be Stage 1 there may be non-palpable extensions into the parametrium.

The following is the plan of treatment considered best by most of the Winnipeg gynaecologists and surgeons. After removing by diathermy, and obtaining a specimen for biopsy, any extensive sloughing tumour protruding into the vagina, a stem containing 100 mg. of well screened radium is inserted into the cervical canal. Attached to the base of the stem is a small bomb containing 50 mg. of radium which is placed against the cervix. This remains *in situ* for 24 hours, giving 3600 milligram hours. Should the cervical canal be obliterated the above technique has to be modified. Radon seeds are inserted into any secondary growths in the vagina. Following this for 20 days, one x-ray treatment of 400 R. units, filtered through $\frac{1}{4}$ mm. of copper, is given daily. Four ports are used to penetrate the pelvis, so that each port is subjected to a total of 2000 R. units during the 20-day period. This will deliver $3\frac{1}{2}$ skin erythema doses into the cervix. The x-ray treatment is valuable. It is necessary to treat malignant deposits which are partially out of reach of radium. It therefore finds its greatest field of usefulness in the third and fourth stages, but for various reasons it is not always feasible to have this prolonged course of treatment followed out. Following the 20-day course of roentgen ray a radium treatment similar to that first given is again applied. If there are any areas of recurrences in three months, radon seeds are inserted into them. Further radiation is rarely of benefit. In adenocarcinoma of the cervix, or in epidermoid carcinoma Grade II (Broders'), a hysterectomy after the radiation is favoured by some of the surgeons.

It is futile to hope that many cervical cancers will be diagnosed early. The almost total absence of sensory nerves in the cervix allows a malignant process to develop without producing pain until it invades the surrounding structures. Uterine bleeding when irregular in character does not cause a patient to seek medical advice, as previous to the menopause it results from

some benign condition five times as frequently as from a malignant one. Even after the menopause, uterine bleeding is the result of a malignant process only in about half the cases, and, due to previous menstrual experiences, a woman is not as alarmed by vaginal bleeding as she would be by bleeding from any other orifice. Leucorrhœal discharge is so common that even the sudden change in its character commonly observed at an early stage of malignancy does not provoke alarm.

These are prominent reasons why the surgeon will see only a few cervical cancers in their earlier stages. Since the results of treatment in the later stages are so poor, even when radium and x-ray are applied in the most approved manner, the logical line of attack on his disease lies in its prevention. It is perhaps one of the most preventable forms of cancer. Cervical stenosis when present obstructing normal uterine drainage or post-obstetrical lacerations with

eversion and erosions of the cervical lips are predisposing causes which allow infections to persist. The low-grade irritation from chronic infection over many years produces a series of changes in the cell which terminates in a carcinoma. Even after a lacerated and infected cervix has persisted for years, a good surgical repair will lower the incidence of malignancy to less than 1 in a thousand, whereas in general statistics cancer of the cervix is responsible for about 3 per cent of the deaths in women over 40 years of age. Every woman who has a persistent leucorrhœal discharge should have appropriate treatment. Pelvic examination one or two months after every childbirth with adequate repair of any lacerations and treatment of other abnormalities should be a routine. If this prophylaxis would be universally carried out it is safe to predict that cervical cancer would be a rare disease.

THE LIPOPENIA OF FEVER*

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WITHIN the last twenty-five years blood cholesterol has been frequently studied in acute and chronic fevers. The results have been unanimous in pointing to a decrease in the concentration of this lipid whenever the temperature of the body rises above normal limits. On the basis of this several authors have suggested that cholesterol may in some manner take part in the immunological reactions of the body.

Cholesterol, however, is but one of several lipids in blood. These substances are all closely inter-related; variation in the concentration of one seldom occurs without corresponding changes in the others, and all appear to be directly concerned with the fat metabolism of the body. The significance of a change in the concentration of one lipid cannot be properly appraised unless at the same time the values for the remaining lipids are known. Apart from blood cholesterol, little is known about the

changes, if any, in the blood lipids during fever and infection. The present investigation was undertaken to establish the concentration of all the known blood lipids, both in plasma and the red blood cells, during and after febrile conditions.

There are three groups of lipids in human blood. The first is composed of the neutral fats, which are esters of glycerol with fatty acids. The second group includes the phospholipids, fatty substances which are characterized by the presence of phosphoric acid within the molecule. The third group comprises cholesterol and its fatty acid esters. Each of these groups is made up of several allied substances of whose function in blood we are largely in ignorance because of the lack of micro-methods for their estimation. The lipids of the red blood cells differ both in nature and amount from those of plasma, and the concentration in plasma may change without corresponding changes in the red blood cells. If whole blood alone is analyzed changes in the plasma may be obscured by opposite variations in the red blood cells and whole

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blood reveal practically no change at all.¹ A satisfactory study of blood lipids must therefore include estimation of the concentration of each group of lipids in both plasma and the red blood cells.

When the concentration of fats and fatty substances in blood is increased the condition is designated "lipæmia". In fever, as will be described later, the opposite phenomenon appears, namely, a lowered concentration of blood lipids. This reaction has been investigated much less thoroughly than the former, or lipæmic, change, and there is no suitable term in the literature to express the general condition. Several authors have described a diminution in one or two blood lipids and have referred to the variation by such terms as "hypocholesterolæmia", "hypolecithinæmia", etc. In a similar manner the term "hypolipæmia" might be used when all the lipids are under consideration. A paradox is involved in these terms. Usage has decreed that lipæmia shall mean an increase in blood lipids. Hence the term "hypolipæmia" literally means "a decreased increase in blood fats". Occasionally one finds for example the term "cholesterolæmia" used indiscriminately to mean an increase *or* a decrease in blood cholesterol. To avoid confusion in titles, I have adopted the term "lipopenia" to signify a condition in which the total lipid of blood is below the average normal concentration. The derivation of the word is obvious.

In 1911, Chauffard, Laroche and Grigaut² demonstrated that serum cholesterol was lowered in value in the acute stage of typhus fever and rose during convalescence. Their observation has been repeatedly confirmed in other febrile conditions. A diminished value for whole blood, serum, or plasma cholesterol has been found to occur whenever the body temperature becomes elevated in infectious fevers,³ diphtheria,⁴ scarlet fever,^{5, 6} smallpox,⁷ typhoid and paratyphoid fevers,^{5, 8, 9} influenza,^{8, 10} erysipelas,^{5, 8} septicæmia,⁸ leprosy,^{11, 12} malaria,^{13, 14} tuberculosis,¹⁵ pneumonia,^{5, 8} acute pellagra,¹⁶ acute arthritis, and acute gout,¹⁷ acute yellow atrophy of the liver, and Weil's disease.¹⁸ Blood cholesterol has also been studied in natural and artificial fevers of animals, with essentially similar results.

It is obvious that the response of blood cholesterol to fever has been well established. Much less is known about the components of the

cholesterol fraction, the free and combined forms. Blood phospholipids have been occasionally studied, notably by McQuarrie and Stoesser,³ who recorded lowered values in the acute stages of fevers. Neutral fats have never been reported, and finally no attempt has been made to determine the partition of lipids between plasma and red blood cells. It was for the purpose of filling in these gaps and obtaining a complete picture that the present investigation was undertaken. Variation in the lipid content of the white blood cells in fever and infection has been previously reported by Boyd.¹⁹

METHOD

The series of cases studied included 4 cases of pelvic abscess, 2 of peritonitis, 2 of septicæmia, 1 of puerperal infection, 1 of pyelitis, 1 of bronchopneumonia, and 1 of post-operative infection. All the patients were in bed. At the height of fever they received the usual liquid diet, while during convalescence the diet was full and balanced. Blood was obtained on one, two, or three occasions during the period of elevated temperature, and then once or twice during convalescence. The sample of blood consisted of 25 to 30 c.c., taken from the arm veins in the morning following a 15 to 16 hours' fast. The blood was citrated, 5 c.c. removed for whole blood analysis, and the remainder centrifuged, to separate cells and plasma. The lipid composition of whole blood, plasma and red cells was then determined by extraction and microanalysis, using the Bloor oxidative technique as modified by Boyd.²⁰

RESULTS

In general the concentration of most lipids was found to be lowered in the plasma and elevated in the red cells during fever, both returning to normal values in the period of recovery. The whole blood values were but slightly lower than in health; they contributed little additional information, and need not be considered further. The results obtained with plasma and the red blood cells separately have been depicted graphically in Charts 1 to 6.

In no case did the particular type of infection appear to have any effect apart from that due to fever itself. It was thus possible, and much simpler, to report collectively all values for one lipid from all of the patients on one

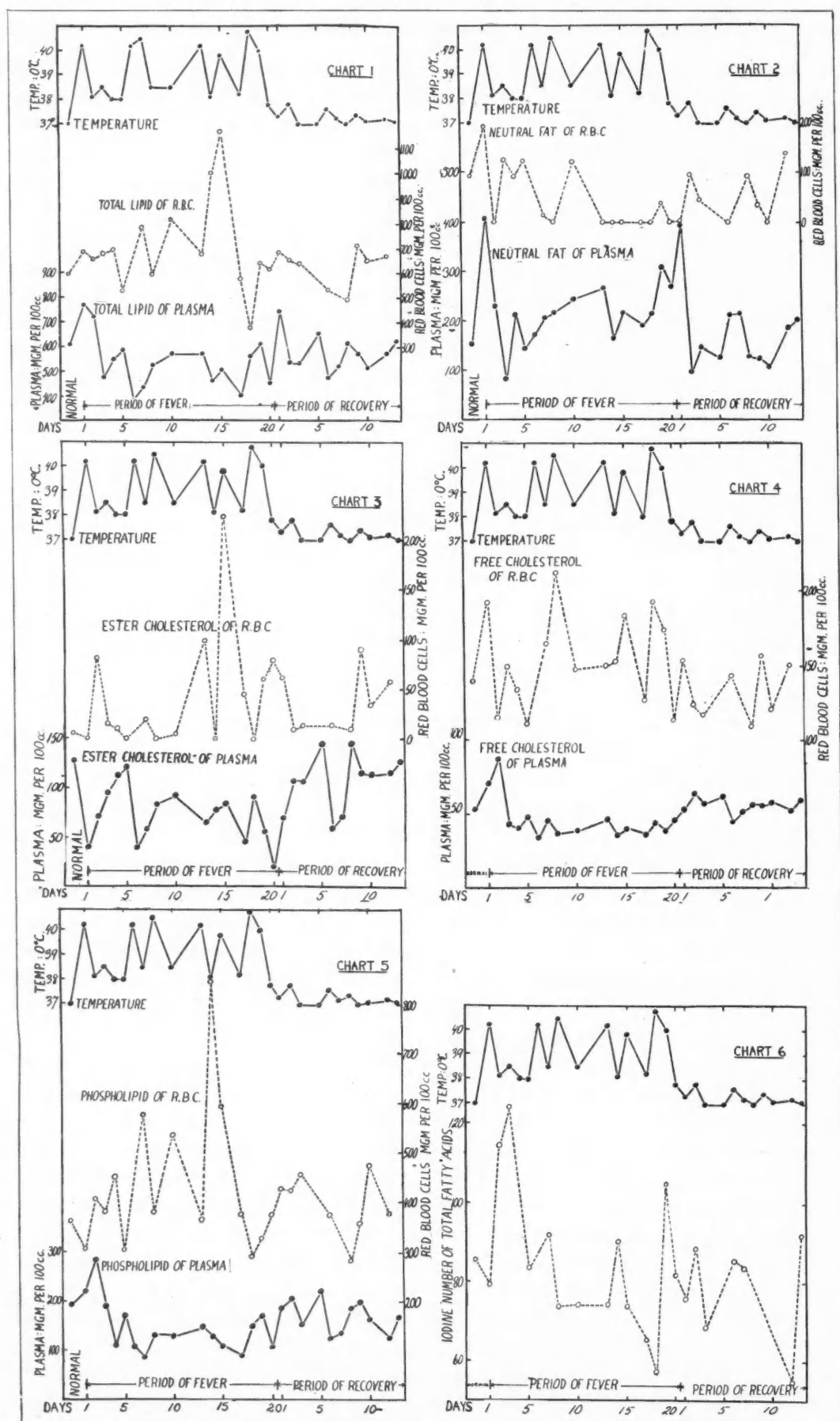


CHART 1.—Composite curves showing the changes in the total lipid content of blood plasma and the red blood cells during fever and convalescence.
CHART 2.—Composite curves showing the changes in the neutral fat content of blood plasma and the red blood cells during fever and convalescence.
CHART 3.—Composite curves showing the changes in the ester cholesterol content of blood plasma and the red blood cells during fever and convalescence.
CHART 4.—Composite curves showing the changes in the free cholesterol content of blood plasma and the red blood cells during fever and convalescence.
CHART 5.—Composite curves showing the changes in the phospholipid content of blood plasma and the red blood cells during fever and convalescence.
CHART 6.—Composite curves showing the changes in the iodine number of the total fatty acids of blood plasma during fever and convalescence.

chart. By joining the points a general fever curve for each lipid was obtained. This method has the disadvantage of not indicating what happened in individual cases, but in practically all of these the trend was analogous to that of the composite curve. The first point to the left of each curve in Charts 1 to 6 represents the mean for healthy normal persons as found in previous investigations.^{1, 20} With this as a starting point, values for patients during the period of fever were plotted according to the day from the beginning of the rise in body temperature on which the sample of blood was obtained. Following the period of fever, observations made during the period of recovery have been plotted in a similar manner according to the day from the time that normal body temperature was first reached. The temperature of the patient on the day that the observation was made is recorded in the top curve of each figure. It will be noted that the body temperature was markedly elevated in each case. The middle curve in each figure represents the lipid concentration in the red blood cells, while the lower curve is that for plasma. The notation for the level of lipids in the red blood cells is placed on the ordinate at the right hand side of each figure, while the ordinate for the concentration of plasma lipids is on the left.

Total lipid (Chart 1). In the blood plasma the total lipid concentration rose temporarily during the onset of fever, but subsequently fell and remained subnormal while the temperature of the patient was elevated. With the decreasence of fever and the beginning of convalescence the total lipid gradually increased to approximately the range in normal persons. The red blood cells exhibited exactly the opposite series of changes. When the body temperature became elevated the erythrocytes were found to contain more fatty substances, and the excessive amounts were lost during convalescence. The majority of substances which go to make up the total lipid also behaved individually in a manner similar to this. The notable exception was neutral fat.

Neutral fat (Chart 2), underwent changes the opposite of those for total lipid, and was the only lipid found to be increased in value in the blood plasma of fever patients. Neutral fat is the form in which fat is chiefly stored in the body. The function it performs in blood is

little understood, but its concentration is the most variable of that of all lipids there.²⁰ In fever it was found to increase in value in plasma early in the disease and remain elevated at 50 per cent over the normal values throughout. When the temperature of the body fell to normal, the concentration of neutral fat in plasma likewise returned to normal. The neutral fat of the red blood cells fell in value during fever, reaching 0 mg. per cent in some cases, while in convalescence the quantity increased to about normal limits.

Total cholesterol behaved in a manner similar to that recorded by previous investigators, as noted before, that is to say, during the period of fever all the plasma values were subnormal and some very low values, as 65 mg. per cent and 76 mg. per cent, were found. In the period of recovery the total cholesterol of plasma rose immediately to normal, but not markedly above normal, as noted by several previous authors. The total cholesterol content of the red blood cells again varied in the opposite direction to that of the plasma, *i.e.*, during fever the cellular cholesterol rose and in convalescence it fell.

Ester cholesterol (Chart 3), exhibited marked variation, in many respects the most extensive for all the blood lipids. In health the average value for ester cholesterol in blood plasma is 128 mg. per cent. The onset and acme of fever were found to be accompanied by the removal of large amounts of ester cholesterol from the plasma, leaving in some cases concentrations as low as 20, 40 and 41 mg. per cent. When all the figures for plasma ester cholesterol were plotted a curve was obtained which oscillated up and down during fever. This was probably not an artefact, because in one case five readings were made during fever, and these, when plotted, exhibited one definite oscillation in the concentration of plasma ester cholesterol. This peculiar finding is of interest in view of the work of Shope,²¹ who noted rising and falling values for cholesterol during the course of cholera in hogs. During convalescence the ester cholesterol content of plasma returned to normal limits.

In health the red blood cells contain but traces of ester cholesterol. In fever several cases were found to contain appreciable amounts of ester cholesterol in the red cells, but others contained none. The significance of

these fluctuations was not apparent, but it was noted that when plasma values fell the cellular level rose. These results, and those with certain of the other lipids, give the impression that the red blood cells may exert a sort of lipid buffer action, tending to keep the lipid content of the whole blood approximately the same.

Free cholesterol (Chart 4), exhibited a temporary rise in plasma during the onset of fever. Superseding this, the concentration of the lipid fell below normal during the period of fever, and remained so until the fever had subsided, when it returned to normal or even above normal values. At the same time in the red cells were found changes which were the opposite of those in the plasma, the concentration of free cholesterol rising during fever and falling during convalescence. Unlike the curves for ester cholesterol, fluctuations in the level of plasma free cholesterol from day to day were not as often accompanied by opposing trends in the red cells.

Phospholipids (Chart 5), varied in a manner similar to that of free cholesterol. In the plasma the concentration rose temporarily with the onset of fever and then fell to subnormal values throughout the period of elevated temperature. In convalescence the curve gradually rose to normal limits. Both the general trend and the individual variations from day to day in plasma values were accompanied by inverse variations in the level of phospholipid in the red blood cells. Thus, during fever the cells contained increased amounts of phospholipid, several over 500 mg. per cent, while with recovery the concentration fell in most cases.

Iodine numbers (Chart 6), of the plasma fatty acids were determined in order to investigate whether or not the composition of the plasma fatty acids changed coincident with changes in their amounts. The iodine numbers plotted in Chart 6 are those of the total fatty acids of plasma. Before considering them, it may be noted that the composition of the plasma fatty acids may be shown to have changed in fever from the data of Charts 2, 3 and 5. The total fatty acids of plasma are composed of fatty acids derived after saponification from neutral fat, phospholipids, and cholesterol esters, each of which contains approximately 95 per cent, 66.7 per cent, and 40 per cent fatty acids,

respectively. The onset of fever has been shown to be accompanied by an increase in the concentration of neutral fat and phospholipid and a decrease in ester cholesterol in the blood plasma. Hence the blood plasma of patients in the early days of fever will contain more neutral fat fatty acids and, temporarily, more phospholipid fatty acids than normal blood. Following the temporary lipæmia of the onset of fever there will be more neutral fat fatty acids and less cholesterol ester fatty acids and phospholipid fatty acids than in healthy persons.

The onset of fever was found accompanied by a sharp rise in the iodine number of plasma fatty acids (Chart 6). This was probably due to the greater proportion of neutral fat fatty acids present, since the iodine number of neutral fat in the depots, and presumably also in the plasma, is higher than the iodine number of plasma fatty acids. The results may be taken to indicate that the onset of fever is accompanied by a sudden flood of unsaturated fat from the depots into the blood stream. As fever persists, however, the iodine number of plasma fatty acids was found to decline to subnormal values. Since neutral fat accounted for the bulk of the fatty acids here also, more than two-thirds of the total, the fall in iodine number was probably due to a lowering of the iodine number of neutral fat fatty acids. Dean and Hilditch²² have shown that the iodine number of cutaneous fat in the pig decreases as the temperature rises, passing from without inward. During fever, subcutaneous and other storage fats may be expected to possess a lowered iodine number. Mobilization of such lipids into the blood stream probably accounts for the lowering of the iodine number of the fatty acids there. Somewhat similar results were obtained by Achard *et al.*⁸ who state that in serum during fever, "le pourcentage des acides non saturés . . . est très abaissé". Hansen²³ has recently made the interesting observation that infantile eczema is characterized by a lowering of the iodine number of the fatty acids in blood serum. In convalescence no immediate increase in iodine number was recorded during the fortnight in which the cases were studied.

DISCUSSION

The results of the present investigation demonstrate that in fever we have to deal with an alteration in the concentration not only of one, *e.g.*, cholesterol, but of all the blood lipids. The characteristic changes in the lipid composition of blood during fever have been shown to be as follows. The onset of fever is accompanied by a temporary lipæmia involving all the plasma lipids except cholesterol esters. As fever continues, a lipopenia develops, due to a diminished concentration of plasma phospholipids, cholesterol esters, and free cholesterol, with an increased concentration of neutral fat. When the temperature subsides all the values return approximately to the range of those in normal individuals. Concurrently with these changes in plasma the concentration of lipids in the red blood cells exhibits exactly the opposite variations. Thus during fever the cellular values of free cholesterol, phospholipid, and, usually, ester cholesterol are increased, while the level of neutral fat falls. The iodine number of the total fatty acids of plasma rises in the early days of fever, indicating the presence of unsaturated fatty acids which are replaced by more saturated fatty acids as fever persists.

Since not one but all of the blood lipids are involved in the reaction to fever, it is probable that we are concerned with an alteration not only, for example, in cholesterol metabolism but with a derangement of fat metabolism generally. There is little experimental evidence as to what may be the cause of this. Raab²⁴ has found that fats are removed from the blood stream more rapidly in patients with a fever than in normal persons. In 21 normal persons he found that 100 c.c. of peanut oil taken by mouth produced a rise of from 36 to 145 mg. per cent in the concentration of blood lipids, while in 10 fever cases the rise was only 3 to 34 mg. per cent. Fat which is absorbed from the intestine or from the storage tissues is transported in the plasma probably in the form of phospholipids and cholesterol esters. Interpreted in this light, Raab's²⁴ experiment may be provisionally taken to explain the low values of plasma phospholipids and ester cholesterol, *i.e.*, these lipids are presumably removed from plasma at a faster rate than they can be synthesized in the tissues and added to the plasma. If such is the case, free cholesterol would probably be rapidly removed from the plasma by those tissues which are synthesizing

cholesterol esters, and in this manner the low value of plasma-free cholesterol may be explained. To offer an explanation as to why neutral fat is elevated in plasma would be but a mere guess at present.

The increase in the lipid content of the red blood cells does not appear to bear any causal relationship to the fall in plasma lipids. The total amount of lipids which these cells are capable of removing from plasma is very small, because fats are not oxidized to any extent, if at all, in these cells. The situation may be described as follows. In the early days of fever the carbohydrate reserves of the body are burned and the fats are mobilized in the blood. As fever persists the fats are used as fuel, and the transport of fatty acids from the depots to the muscles, etc., becomes very active. The transport fats are rapidly removed from the plasma and the reserves are gradually used up, producing loss in weight and, in extreme cases, emaciation.

SUMMARY

All of the blood lipids respond to severe febrile conditions, the reaction being independent of the cause of fever but directly related to the stage of the disease. During the onset of fever a temporary rise occurs in the concentration of all plasma lipids except ester cholesterol. During the height or acme of fever a marked lipopenia develops, due to a 20 to 30 per cent decrease in plasma-free cholesterol, a 30 to 40 per cent decrease in phospholipids, and a 50 to 60 per cent decrease in cholesterol esters. At this time neutral fat is not lowered, but rather increased 40 to 50 per cent in plasma. With falling temperature, all the values return to normal or approximately so.

Variations in the iodine number of the total fatty acids of plasma indicate that the onset of fever is accompanied by a sudden flood of unsaturated fatty acids into the blood stream. As fever persists, the unsaturated fatty acids are replaced by more and more saturated acids, and this condition persists well into convalescence.

The red blood cells exhibit in general changes the opposite of those in the plasma. At the height of fever the red cells contain more lipids than normally.

The results are interpreted as signifying a general derangement of fat metabolism in fever, probably due to an excessive removal of transport fats from the plasma by the active body tissues (museles, etc.).

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RUPTURE OF THE DIAPHRAGM*

(WITH REPORT OF TWO CASES)

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DIAPHRAGMATIC herniæ are usually classified as: (1) congenital; (2) acquired; (3) traumatic. The last may result from direct injuries such as stab or bullet wounds and surgical injuries, or from indirect trauma, the force in this case being applied to the abdomen or chest.

CASE 1

C.M., male, aged 25 years, was admitted to the emergency ward of the Toronto General Hospital one hour after sustaining injuries in an automobile accident. Details of the accident were lacking. The only external evidence of violence was a small laceration of the scalp. The chest was resonant throughout, with absent breath sounds anteriorly on the left side. There was tenderness on palpation over the lower ribs on the left side in the scapular line. The respiratory rate was 26 per minute. Pain was severe in the right hip and was aggravated by iliac compression. Catheterization led to a suspicion of ruptured bladder.

Within four hours the patient had laboured respirations, increased to 50 per minute. The left chest was

hyper-resonant and the breath sounds, absent anteriorly, came through faintly above and posteriorly. Percussion showed a shift of the mediastinum to the right. A clinical diagnosis of ruptured diaphragm was made. The x-ray is shown in Fig. 1. The left lung is seen pushed to the level of the third rib anteriorly; the heart is displaced to the right, and the stomach shadow is seen in the left chest below the lung. Two ribs were fractured at the angles, but well above the attachment of the diaphragm. There was a comminuted fracture of the pubic bones. The patient's condition was so critical that an operation on the ruptured diaphragm was considered unwise, but the ruptured bladder was repaired. He became deeply cyanosed and died from respiratory embarrassment, superimposed on shock, one hour after this operation.

At the post-mortem examination the thoracic and abdominal viscera were removed *en bloc*. The stomach, small and large bowel, and spleen were in the thoracic cavity. The spleen was torn into two separate parts, and there had been extensive bleeding in the left pleural cavity and peritoneal cavity. The stomach was tremendously distended and on the point of perforation. Fig. 2 illustrates these findings.

Although almost every organ in the abdomen has, at times, passed into the chest through an opening in the diaphragm, the stomach and

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colon do so most frequently. Truesdale,⁶ by means of the x-ray, followed the process of herniation artificially produced in animals. He first made a rent in the diaphragm and sutured it. After giving the animal barium, he, at a second operation, removed the suture and observed that the stomach passed through the opening, followed by the colon.

The only other case of diaphragmatic hernia in the post-mortem records of the hospital is interesting.

CASE 2

A girl of 24 years had been run over by a waggon at the age of 4 years, and from that time had suffered recurring attacks of sharp, substernal pain. She died, after a prolonged attack of pain, from perforation of the stomach into the left thoracic cavity and a resulting pyopneumothorax. The tear in this diaphragm commenced 2 cm. in front of the œsophagus, and extended into the left posterior quadrant.

To make a careful study of the anatomy of the normal diaphragm, the organs of a young man of the same age, 25 years, who had died of meningitis, were studied both *in situ* and after removal from the body. With the diaphragm *in situ*, before the thorax was opened, it is to be noted that the orifice of the vena cava is in the central tendon and surrounded by a dense ring of fibrous tissue. The aortic opening is placed posteriorly in front of the spine, where pressure would tend to close it. The œsopha-

geal opening is, for many reasons, in a most vulnerable position: (1) It is very near the highest point of the dome. (2) The muscle fibres are arranged loosely about the opening. (This orifice is really a result of the splitting of the fibres of the right crus to encircle the œsophagus.) (3) Two fingers could be passed alongside the œsophagus through the muscle opening. (This arrangement permits the passage of a bolus of food). (4) the œsophageal opening is to the left of the centre and the left dome is less protected by the liver than the right. (5) The orifice is in the most vulnerable area of the musculo-tendinous structure, namely, at the point of insertion of muscle into tendon. (6) It lies below the posterior mediastinum which would offer less resistance to an upward thrust than the middle mediastinum containing the heart. (7) There is a small peritoneal pouch extending up from the lesser sac on the right side of the œsophagus.

The diaphragm develops from four elements as indicated in Fig. 3, and a failure of fusion of the elements taking a share in its formation is the basis of the congenital herniæ.

The prevertebral muscle masses give rise to the crura. The muscle fibres spread out from the centre, degeneration in the central part gives rise to the central tendon, and eventually

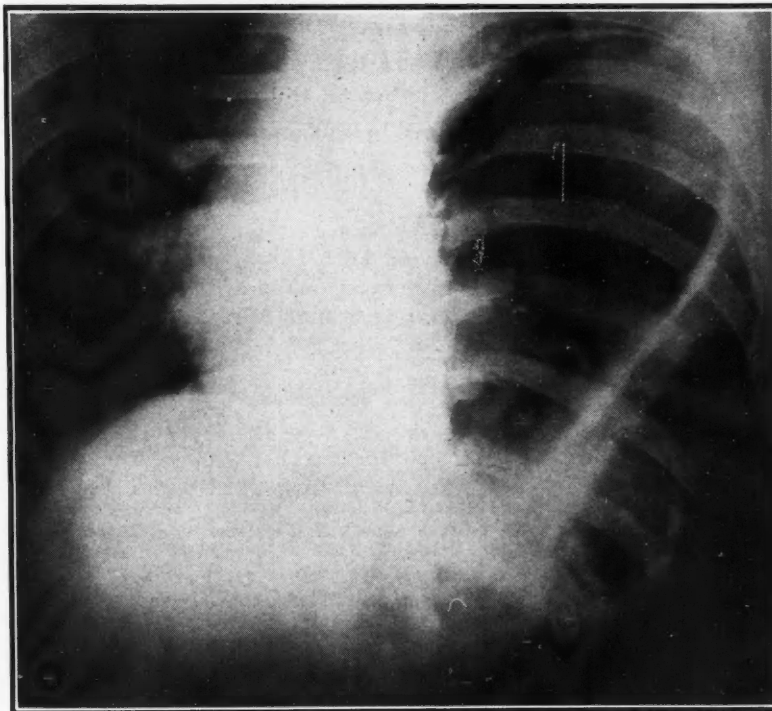


FIG. 1.—X-ray showing the stomach rising high in the left chest.



FIG. 2.—Sketch illustrating the post-mortem findings.

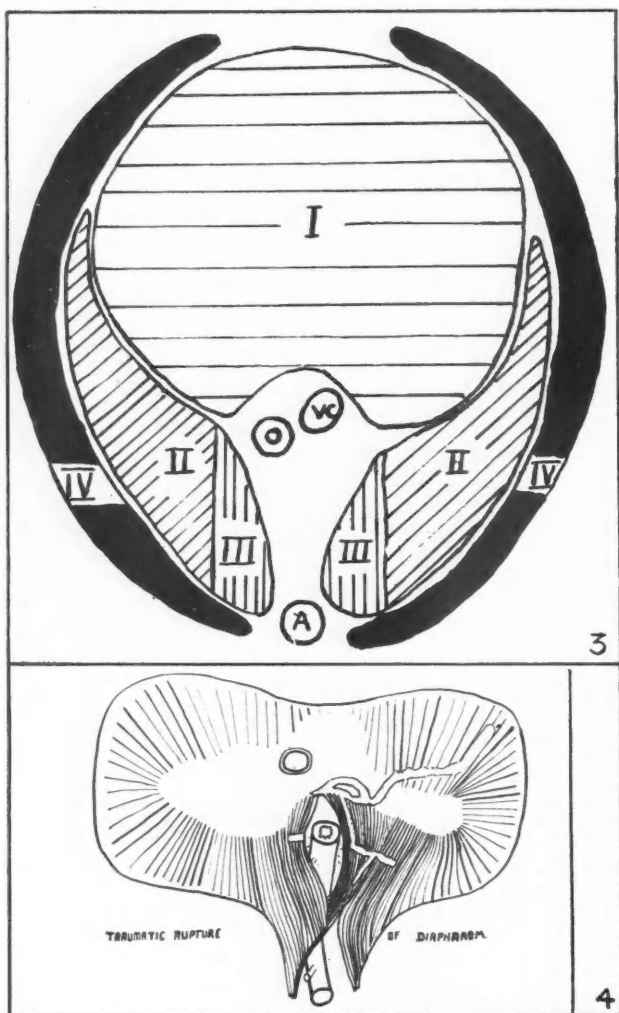


FIG. 3.—Illustrating the development of the diaphragm. (Arey. Developmental Anatomy, page 133).

- I. Is the septum transversum carrying with it the phrenic nerve.
- II. The two pleuro-peritoneal folds.
- III. The dorsal mesentery carried out with the oesophagus.
- IV. Portions of the body wall taken up in its formation.

FIG. 4.—The distribution of the tears in relation to the course of the muscle fibres.

the phrenic nerve supplies the whole musculature. The commonest congenital hernia is due to failure of development of the pleuro-peritoneal folds. A gap remains between the costal and vertebral attachments, more frequently on the left side. The next most common site is in the dome where it may be due to a failure of fusion of the septum transversum and pleuro-peritoneal folds. The third most common site is the region of the oesophagus.

In studying the first case here reported, the pleura, pericardium and peritoneum were removed from the surface of the diaphragm, and the torn muscle fibres were carefully sewn back into their proper positions. It then had the appearance of a normal diaphragm. Fig. 4 shows

diagrammatically the distribution of the tears in relation to the muscle fibres. A portion of the right crus is torn across. A small tear is seen in the left crus. The rent crosses the central tendon, isolating a part of it, and then splits muscle fibres toward the periphery, but at no place does it reach the periphery. The tears are irregular, almost stellate in distribution; the majority of them are situated near the oesophagus. It may be deduced that the maximum force was spent in this region and radiated to the periphery. It is unlikely that the long linear tear was the beginning and the stellate tear secondary to it. One tear at right angles to another argues that the tears originated at the junction of the two.

Some authorities believe the mechanism in indirect traumatic herniæ to be a shearing strain which separates fibres of diaphragm originating from different parts of the chest wall. A deformation of the thoracic cage, as one deforms a hoop and tears a paper pasted across its face, can tear the muscle of the diaphragm between the costal and vertebral origins. But to be compatible with this theory, since the dome is loose and can descend under tension, the periphery would have to be the point at which the tear would start.

In the case presented there was every indication of a previously normal diaphragm, and the mechanism by which the hernia was produced is believed to have been a simple transmission of force from abdomen to thorax through the most vulnerable point in the normal diaphragm—the region of the oesophagus.

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MENTAL DISORDERS WITH A BIOLOGICAL BACKGROUND*

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MENTAL ailments can be classified in order of their complexity as traumatic, inflammatory, hereditary, and congenital. This last type which is due to the coming together of incompatible racial types is very common, and up to the present has not received the attention which its frequency demands. The reason for this neglect seems to be the non-discovery of any yardstick by which the components of a marriage may be measured. An illustration of this condition is seen when children of bright or brilliant parentage are backward at school and find difficulty in fitting themselves into society later in life. Retardation may be assumed to be present in those children who have not reached high school entrance before beginning their fifteenth year.

Three families in which all children having reached this age are retarded will be briefly summarized. The blood groups of the parents will be given here as a measuring rod of proved worth.

Family 1.—Father intelligent, works steadily at a skilled trade. His blood group is O. The mother is a Normal School graduate, and taught school previous to her marriage. Her blood group is B. Both children in this family are retarded.

Family 2.—Father intelligent; has held civil service positions during the past fifteen years. His blood group is O. The mother is a senior matriculant from a representative ladies' college. Her blood group is B. The one child who has reached his fifteenth year is retarded.

Family 3.—Father intelligent, has been foreman for a large manufacturing concern for the past twenty years. He spends much time tutoring his children. His blood group is O. The mother is skilled at needle work, and has remarkable ability in organization of clubs, etc. She is highly intelligent. Her blood group is B. Three children who have reached the fifteenth year are retarded, one having gone through auxiliary classes until he was old enough to leave school.

In these families the following factors are common, first, blood group O in the father,

secondly, blood group B in the mother, and thirdly, retardation in all possible children. The importance of these relations is emphasized when it is stated that on determining the blood groups of 200 married couples only in the above 3 cases was the O male and B female combination found. The question arose as to whether nature puts forth any effort to prevent marriages which bring forth retarded offspring.

Enough blood groups were collected from the literature to bring the number up to 500 married couples or 1,000 individuals. These were distributed as follows.

215 group O women and 215 group O men.
198 group A women and 184 group A men.
65 group B women and 82 group B men.
22 group AB women and 19 group AB men.

The possibilities of marriage between individuals of the various groups were calculated and set forth as below in comparison with the actual statistics by way of percentages.

Women's Blood Group		Men's Blood Group			
		O	A	B	AB
O Calculated	....	42.5	36.8	16.8	3.6
O Statistical	....	46.5	35.0	15.0	3.2
A Calculated	....	43.5	36.2	16.2	3.7
A Statistical	....	45.5	35.0	15.5	3.5
B Calculated	....	43.0	37.0	16.0	3.8
B Statistical	....	26.0	47.4	22.0	4.6
AB Calculated	....	44.4	35.5	15.5	3.7
AB Statistical	....	36.0	31.5	22.5	8.0

It is not the purpose here to make an extensive analysis of this table. It is sufficient to note that according to the theory of probability 43 per cent of blood group B women should have married group O men, while actually only 26 per cent did so. Also that 44.4 per cent of group AB women should have married group O men, while only 36 per cent did so. The inhibition toward marriage between group O men and group B women is quite clearly cut, and, considering the outcome as illustrated in the

* Read before the Section of Medicine, Academy of Medicine, Toronto, November 13, 1934.

three families quoted, there seems to be "a divinity that shapes our ends".

Other families with retarded children have been examined, and in all cases the father was found to belong to blood group O. The mother sometimes was group A or AB, but not group O. They did however fit generally into a similar class, which will be discussed under class III here below.

In the above table another biological fact may be observed. With the exception of group A men and women, whose marriage customs will be discussed later under class II, there is a strong tendency for groups to marry into their own blood group oftener than calculations would lead us to expect. In 200 couples where the age of marriage was ascertained it was found that where both parties were between the ages of 21 and 36 years 50 per cent married into their own blood group. Of those couples whose ages at marriage were above or below this fifteen-year period only 33 per cent married partners of their own group.

Disregarding the physical or mental health of children from the various blood group combinations of parents, it can be said with confidence that marriages are much more successful when both parents are of the same group. The most risky of all combinations seems to be where the man is group B and the woman group A. Reasons for this incompatibility will be seen later, as the people of Western Europe are divided into three distinct behaviour classes.

The attraction for one another which exists between people of similar blood groups is not confined to marriage only. Families which are more or less complementary to one another in times of joy and sorrow belong to similar blood groups. There is an ease of understanding among them, and the effort necessary to tolerate one another is reduced to a minimum. In other words, they are not under any great degree of mental strain when in one another's company. To have such as visitors is a rest, rather than a task, so the friendship goes on.

These observations lead but in one direction, which is, that mental make-up has a definite racial basis. The races of Western Europe have undergone an outward amalgamation, but the very tendencies which we have seen in marriage ratios, measured by blood groups, give con-

vincing evidence that in the local melting pot (Toronto), people assembled from every county and shire in the British Isles and many of the departments of Western Europe, there is an inherent tendency to segregate into their primary components.

If mental strain is avoided by the association of people with similar outlook toward the environmental structure it may be well to search out the minimum of viewpoints that are present in our midst. Lack of training in anthropology has handicapped the psychologist and psychiatrist in knowing just where to draw the line between normal classes. It is the purpose here to point out some of the ear-marks by which such classification can be safely made. The outline which follows is based on well established racial foundations, which will include about 90 per cent of the population of Western Europe. In the three classes which will be outlined similarity of order will be followed, in order to illustrate the comparison of natural everyday behaviour of each class. This normal behaviour as delineated here for each class, will often be seen in definite conflict with that of one or both of the other classes. Sociologists and educationalists tend to standardize and unify their various fields. In this unification there is a drift from the normal behaviour of one class to that of another, as first one and then the other is able to climb into the driver's seat. An example of this was seen a few years ago when an increasing amount of handicraft was introduced into the matriculation course. On all occasions each class is called upon to subvert a portion of their normal traits in the interest of the suggested unity. Hobbies are developed to give vent to subverted desires. The traits which will be considered are: (1) early habitat; (2) physical appearance; (3) means of livelihood; (4) marriage customs; (5) religion; (6) language; and (7) dress. Psychologists will be able to recognize in these classes a rearrangement of their chosen field, stripped of the usual nomenclature.

Class I seems to have lived, since the last ice age, in that part of Western Europe which was occupied by the former Roman Empire. They are of medium height and nourished better than most people. As a class they can be recognized by the shape of the face, which has cheek bones noticeably wider than the brow. The

roof of the head slopes upward and backward from the hair line to a point vertically above the mastoid processes. The teeth of these people are usually good. The hæmoglobin of the blood is high. They are fortunate in being able to digest vegetables and other so-called "roughage", but unfortunately for the rest of humanity they have been lately the means of forcibly suggesting that these substances should be used universally. This could be labelled conflict No. 1, but the text will not be interrupted by calling attention to these in passing. Their blood group is almost always O, and in this country at the present time they are about 40 per cent of the population, though there is reason to believe that 100 years ago they were not more than 30 per cent. They are rank individualists, and originally obtained their living by hunting. They have not changed in this regard. Part of the art of hunting is the art of mimicry and imitation, though they cannot imitate that which they have not seen or heard, as star actors or actresses must do. Their gift in this regard is of great value to them. This inborn trait explains why a hunting people can make up almost half of the population of present day cities. This power of imitation is rated by psychologists as a desirable trait, and they are encouraged in this belief by the fact that over 50 per cent of professional people are of this class. This is the more noteworthy because the percentage of these people in the professions is larger than in the general population. I am not convinced, however, that many people obtain university degrees where both parents have blood group O, for most graduates of institutions of higher learning are composite types, but some basic stock must be represented in a dominant form. Power of imitation alone would not get the student over examination barriers; a second quality of the hunter is necessary, that of persistence. The ancient hunter who was thwarted by failure to obtain his prey would starve. Persistence was his main agent for survival. These people are happy when engaged today as canvassing salesmen, but they are rarely contented while working for a fixed salary. If they have hunted a salary position for themselves, they set out to find something remunerative to do in spare time; or if the salary is large gambling is an outlet for the inherent desire to hunt. They hunt posi-

tions as tradesmen, which they are not proficient to fill, and are not contented except when working on a commission or piece-work basis. The real interest in work is the hope that the day's returns may be financially larger. This eagerness to serve for a price, in a people who are able to imitate almost every calling in society, has had an extensive modifying influence on present day social conditions. In marriage they are monogamous, a condition for which their women are particularly adapted. They prefer not to talk about sex experiences, but do not taboo masturbation or onanism, unless in imitation of others; for their tendency is to agree with the majority in non-essentials. Abortion and neglect of children however are incompatible with their inborn standards. Modesty to them is a natural trait. Thus bodily exposure, except in conjuncture, does not meet with their approval. In religion these folks are naturally sceptics, though they imitate any religion that is practised by those with whom they associate. Great, however, has been their influence on the religion of Western Europe. The carrier of a new creed has consistently had to add to his code, monogamy, modesty, and motherhood inviolate, before they would condescend to imitate his other ritual. These three they held sacred before the birth of Christianity. These Christianity accepted, so Western Europe is Christian; these the Moslem would not accept, and therefore could not cross the Pyrenees.

The language of this class was perhaps similar to the Basque tongue of today. Aryan languages are not natural to the architecture of their brain. When they learn to talk in childhood they must learn a foreign tongue, which is a reason for delay in speaking. This however is not always a handicap, as it is one of the reasons why these folks have been able to reach the professions. Having learned a foreign tongue in early childhood, another two or three similar (Aryan) languages are obtained with moderate ease. Enough evidence has been gathered to show that these people rank high in psychological tests where only simple sound is involved. This is not true, however, where discrimination of sound is concerned, and the fact remains that they remember best what they hear rather than what they read.

Class I people are the best dressed in our midst. The desire to imitate, born in the hunter, urged him to masquerade before the animal denizens of the forest; so class I people of our population follow strictly the contemporary styles, though they do not create them.

Class II. In order to get clear-cut biological characteristics in a race, that race must dwell for a long period of time in an insular or peninsular habitation. Such a peninsula is available as a cradle for the Aryan race, which must include Scandinavian as well as Semite. The greatest movements of people have always been caused by drying-out of large areas of land. The parching of the Arabian peninsula



In the above map of Western Europe and North-Western Africa the Fig. 1 is not shown because these people cannot be localized by their source of ingress, as can be, in the case of the Aryan type, Fig. 2 or Fig. 3. Fig. 1 would reach from the word Cro-magnon in N. Africa to the same word just south-east of the Baltic Sea.

caused a northern movement of the Aryan peoples, one branch following the south shore of the Mediterranean Sea to the west, another branch turning eastward to India, and a third proceeding northward across Russia toward Scandinavia.

Only in one regard are these people divided physically into two groups, that is in height; some are quite tall and others quite short, but all are lean and angular. If they become obese it is usually in an aggravated way. The face is narrow with cheek bones and brow about the same width. The nose is large, being developed at first for the breathing of dry desert air; it was useful to the northern branch for breathing the cold sub-arctic atmosphere. The top of the head is level. The teeth

of these people decay much earlier than those of most people in Western Europe, and it was for them, to a large extent, that cod liver oil therapy became popular.

The hæmoglobin of the blood is about average, but their blood pressure is usually high. The blood group of these folks in Western Europe is usually Type A. This type was developed by the branch of the race which went north to Scandinavia. In this trek they had to cross the habitation of Mousterian man, whose dwellings stretched from England to India. From this mixture three mutations likely occurred; (1) blood group A; (2) auburn hair; and (3) freckled skin. True blondness likely developed after this branch became locked in the Scandinavian peninsula. Proof of the suggested origin of blood group A is found in the readiness with which this group is adopted by remnants of Mousterian man, as opportunity arrives. This class represents about 40 per cent of our local population. Class II people are socially minded, and expect to live under some paternal arrangement. They were originally a pastoral race, tending their flocks and breeding the best stock possible for a given environment. A gift which they developed while tending their flocks was empiric medicine. From that part of England (Devon, Cornwall) which was settled by the Semitic Phoenicians came many of the early empiric physicians of that country. Undoubtedly they learned to develop human specialties by marriage arrangements, just as they bred their flocks and herds to the best advantage. From no other race comes so many specializations as from the Aryan people. These specializations are just as likely to occur in the Semitic as in the Scandinavian branch of the race. These qualities may be briefly listed: (1) animal breeding; (2) empiric medicine; (3) merchandising; and (4) artistic and constructive handicraft. This last includes mathematical and architectural ability. Skilled musicians are also of this class. The reason for the development of these specializations likely lies in their knowledge of animal breeding. Atmospheric conditions forced the Scandinavian branch to develop the art of building. Winter housing was necessary for protection from the elements, and the construction of boats to gather their means of sustenance. Unfortunately only a few of this class have been

able, during the last 3000 years, to follow their original occupation as herdsmen. They have been forced to rely on their handicraft and merchandising ability.

While discussing the hunting class it was noted that they go to their customers. This condition is decidedly to the disadvantage of the natural merchant who waits for the customer to come to him. Similarly, with that branch of this class who seek to make a livelihood at building and fine arts the market for their ability is often snatched from them by imitators with more initiative. These facts are important for down through the ages we find these people forming fraternities, guilds and trades unions for their protection. They live in fear that their means of sustenance may be snatched from them. They are thoroughly impressed with their dependency. In marriage custom they are naturally polygamous. Sex desire in the women of this class is not continuous throughout the month. Free discussion of sex matters comes natural to them, and most of what is written about such subjects is the experience of these people. They are the only people in Western Europe who will discuss their personal affairs without reserve. Masturbation and onanism are taboo practices, though bodily exposure seems natural to them. Abortion is condoned, and it is estimated that 75 per cent of this practice is among these people. Again we see the highly developed fear-complex of the merchant and the builder coming into evidence which is mostly a fear of starvation. Fertility is very high in women of this class, likely to compensate for frequent abortions. Unlike other classes, the women are fond of one another's company. This is likewise true for the men, as made evident by fraternities. In religion they are most devoted and enthusiastic. Their nature is such that they prefer the finite in all things. Being also architects they bring their religion within this scope. They have always been the carriers of religion in Western Europe. No other race can command the fervor and enthusiasm which is inherent in this type where religion is concerned. In all other fields except religion will power is weak among these people. This class pay their debts, partly through a feeling of brotherhood toward mankind, and partly through the high fear-complex which haunts them. Being a pastoral people who slaughtered numbers of their herds

for food at regular intervals, the shedding of blood is not abhorrent to them, and was often a part of their religious ritual in former times.

The language of this class is the Aryan group. It is their natural tongue, the one for which their brain fibres are arranged. With this good fortune their children are able to talk at a quite early age. Memory with these people is closely related to sight. They are good storytellers and enter into conversation freely, the words welling up as from a flowing spring. Unfortunately, they cannot learn other languages with the same ease that they learned English, and in this way they are handicapped while seeking higher education.

Evidence is at hand to show that in psychological tests they rank above all others where sight is involved. They also react highest in tests for skin and muscle sensation. These results are to be expected since this class is representative of fine craftsmen.

They are not well represented in the professions. Though they are almost 40 per cent of the local population, only about 20 per cent of professional people have been found to belong to this class.

These people design clothes as they design buildings and other works of art; but they are not fine dressers. Their clothes are according to the mode, because they created the mode, but suffer often by way of maintenance. Personal appearance is not one of their outstanding concerns.

Class III must have developed in Eastern Asia. This class is rarely over six feet in height, but also is rarely below five feet, three inches. If they are obese they usually go to pathological extremes. The forehead is broader than in the other two classes. The cheekbones are slightly narrower than the brow but the face is symmetrical. They are related to the Mongol peoples, but great spaces of time have passed since they could be called a pure race in that regard. The American Indian had a similar origin, spreading eastward, while this portion of the population of Western Europe spread south and westward. The teeth of these people are usually good. The hæmoglobin of the blood is low. The blood pressure is also low. Their natural food is cereals, an important part of their essential diet being those foods containing vitamin B, and it was for their benefit that people at large have

been offered these foods. The blood group is usually type B. The blood group seems to have developed by a mutation which occurred by mixing of the eastern wing of the Aryan race with the Mongol peoples. It is most frequent in the area where this contact likely took place. They represent less than 10 per cent of our population. Frugality and rugged honesty are traits fervidly adhered to among Class III.

They are independent, and are naturally agriculturalists. The products of their land are a pride to them, so much so that they enjoy handing over the results of toil and care for a reward of admiration. They have difficulty, however, when they become part of a highly organized state, where a percentage of the return of their land must be paid in taxes. The art of marketing, which becomes necessary in complex civilizations, is absent from their inheritance. The broad forehead so evident among actresses indicates that this class has something in their make up which gives them power of interpretation as well as imitation. Will-power in this class is portrayed by a stubbornness which is a necessity in a natural agriculturalist, whose efforts are so frequently flouted by the atmospheric elements. Will-power is not continuous among these people, as in Class I, but intermittent, as seed time, harvest, and ploughing are separated by intervals. Men and women of this class are found to-day employed in those occupations which are intermittent in character, but require sudden changes of procedure to meet a varying situation. They are proud of their leadership in this regard, but they cannot easily settle down to the monotony of routine practices. Their sense of equity and justice is highly developed. This quality is an asset to them as leaders in normal times.

Most of the women who are at present or who in history have undertaken men's tasks belong to this class. These women can mix and work with men without creating the jealousies which are so common. In matrimonial life these people are monogamous, but evidence of matriarchal conditions are seen. The women prefer to choose the men to whom they will be wed. If this opportunity is not granted, they remain unwed, as sex desire is intermittent and well controlled. They do not discuss sex experiences and abortion is strongly tabooed. Fertility stretches over a longer period than in the two former classes, but children are naturally spaced

quite widely. They are fond of children. In religion they are always reverent, but never ardent; thus broadmindedness acquired its name from the broad forehead of these people. They are frequently members of two or more religious bodies at the same time, such bodies as would be considered absolutely incompatible by people belonging to class II. The only religious fervour exhibited by these folks is on behalf of honesty and truthfulness.

The original language of these people was certainly not Aryan, which language group is foreign to their brain-cell arrangement. An example of the language they brought to Europe is seen in Finnish, Magyar and Turkish. For similar reasons, referred to while discussing Class I, the learning of foreign languages also comes easy to Class III. In a set of 15 psychological tests 5 were based upon discrimination or choice. In these 5, Class III individuals ranked highest. It is not surprising to find that 20 per cent of the professions are represented by this class. This is explained by discernment, and, lastly, stubbornness which carries them past difficulties.

This class is well dressed, but is very conservative in this regard. They have not the urge to change rapidly their custom of wearing apparel, and are often looked upon as odd. Undoubtedly this class was well represented in the Friend's Society of the latter part of the 18th century.

These three classes include over 90 per cent of the peoples of Western Europe, but three other remnants of former prominent races should be mentioned, as they have a place in mental ailments. Two types with receding chins have been recognized; one from Essex and Kent Counties in England, and another in north-western Ireland. Only rarely do they ever approach pure type. The third type is a remnant of a dwarf race which seems to be related to class two, as it amalgamates with it quite easily.

Two cases may be quoted to illustrate the application of the classification outlined above.

A boy 14 years of age began to have epileptic seizures of the major variety. These lasted over a period of two years. He is tall broad-headed and has blood group A. He is however, from a behaviour standpoint, definitely of class III. His mother and father are similar to himself physically, but their behaviour is of class II. This later class is in keeping with their physical structure, except their broad-headedness. In the boy this element which was present in both parents has been multiplied, to give him at least in part the brain structure and function

of Class III. It will be recalled that this latter class is a low blood pressure group, but his physical make-up belongs to the high blood pressure class. The vascular structure of the brain is likely of two types which do not always synchronize under abnormal conditions.

A young man who has his junior matriculation and his intermediate certificate in accountancy left a position which he had held with satisfaction for about three years, and remained at home for almost two years. He claimed that he lost faith in his work due to a dishonest transaction some two years before, and that he did not have strength enough to carry on work of any kind. A consultant diagnosed the case as *dementia præcox*. This young man is 5 feet 9½ inches tall, with broad forehead, and has blood group A. The mother is 5 feet 8 inches tall, has blood group A and, as is to be expected, her blood pressure is high. The father is 5 feet 8 inches tall has blood group B and, as is expected, his blood pressure is low. When this young man was at the worst stage of his depression his blood pressure was less than 100 mm. systolic. According to his height and blood group his blood pressure should have been comparatively high. When this young man's systolic blood pressure reached 130 mm. he returned to work and has been advanced in position and salary twice during the past year.

All cases are not so simple as this last, for here the brain can be assumed to have been uniform in its vascular structure. Local areas of hyper- and hypo-tension undoubtedly exist in the central nervous system of these people, as they do in other parts of the body. A condition similar to urticaria, which is known to be most common among the racially mixed, undoubtedly affects areas of the central nervous system as it does the dermal system. The epileptic seizures in the first case above described can be prevented or brought about at will by the exclusion or inclusion of a single article of diet. The boy has not had an attack for the past six months.

Urticaria renders visible the variation of tissue reception and reaction which undoubtedly is present in other organs of the body as well as the skin. In some persons it may be external, while in others the condition is entirely internal. Urticaria exhibits what a patchwork the human organism may be without too great a deviation from the normal.

Much has been written lately concerning the relation of birth injuries to mental ailments which appear in a child's later life. This relation is difficult to measure, as most birth injuries are due to disharmony between the shape of the infant's head and the mother's pelvis. This incompatibility again being a racial matter, the resultant mental disorder simply has two causes

after birth where only one existed before. Since birth injuries are much more common than feeble-mindedness, it must be assumed that the tissue injured was likely abnormal before injury. Nervous tissue injured at birth regenerates in an unexpectedly large proportion of cases. Since tissue receptivity has been shown to vary in other parts of the body, why should we expect nervous tissue to be different? Tissue response under given glandular systems is usually normal, but small islands often remain powerless. With increase in the supply of this hormone or that (thyroid, adrenalin, insulin, pituitary) sometimes these cells will take on normal function; but with hormones balanced for proper reception and metabolism in 90 per cent of the organism, nature seems resolved to disallow a disruption of this equity, even though areas unfortunately present in important organs are neglected.

In conclusion, it may be well to recall to what extent young folks are being urged to have a medical examination before marriage. Just what do the advocates of this measure mean? The medical practitioner can rule out syphilis and tuberculosis by scientific means, but what else he learns would be the result of questioning. This method of examination renders the whole procedure on a par with a tribunal of self-accusation. Some tangible yard stick must be put into the hands of the physician from which he can read the records and assess their value. Five racial factors should be similar in both parties in a marriage: (1) eye colour; (2) standing height; (3) head shape; (4) face shape; and (5) blood group. The first two of these indicate glandular capacity; the second two are racial marks of somatic structure; the last is related to nervous tissue and its response to the outside world.

Obedience in this regard will avoid the long train of endocrine disturbances, bone and dental deformities, and, lastly, and most important, many of the hitherto unexplained mental and nervous disorders which are calling loudly for relief and eradication.

Gratitude is hereby expressed to Prof. Bott for copies of psychological scores.

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THE EXAMINATION OF THE GYNÆCOLOGICAL PATIENT

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THE average practitioner is distrustful of his ability to make an effective gynæcological examination. As a student he gained little proficiency in this procedure, principally because of the fact that there is a limit to the number of vaginal examinations that can be made on a single patient even in a teaching hospital. As a young practitioner he found that his patients drew back from the idea of such an examination. Realizing his lack of proficiency, and feeling sensitively the patient's attitude, he probably refrained all too often from pursuing his righteous purpose, with the result that he remains inept in this particular branch of diagnosis.

In teaching students I have pointed out these circumstances and implored them to persist with pelvic examinations, even if the social resistance was great and the yield in enlightenment all too small. They are assured that the social resistance will lessen if they *creep up* on the examination, and that the examination will yield more enlightenment if they pay heed to the little clues and disregard the disappointment that comes of not feeling a pelvis full of gross pathological lesions. What I mean by "creeping up" on the examination is this. To reassure the patient first of all by obtaining a careful and searching history, and then to go on to an abdominal and general examination before doing the vaginal. What I mean by "paying heed to the little clues", etc., can be illustrated by taking a case of ectopic gestation. You can make a diagnosis in such a case without feeling the tubal swelling, if you have noted the cherry-coloured vaginal bleeding and the tenderness on moving the cervix and on pressing up into the fornix on the affected side; or in a case of acute salpingitis it is not necessary to feel the actual tube if you have noted the bead of pus in the urethra, the drop of muco-pus hanging from the inflamed cervix and the tenderness on moving the cervix, and in both postero-lateral fornices.

In taking a gynæcological history there are four things to remember: (1) That a patient will often lie deliberately if it is in her interest to do so. For example, a girl who is pregnant or has salpingitis will swear that she has never indulged in coitus; or a pregnant married woman desirous of any operation that will end pregnancy will tell you that she is menstruating regularly, or even *excessively*. (I have been told by four women who were pregnant that they were menstruating excessively. They had evidently heard from someone that excessive bleeding went with the sort of tumours for which a hysterectomy was done). (2) In describing symptoms women will generally withhold any information concerning coitus—for example if it is painful and distasteful, or normal and satisfactory—unless they are asked about it. (3) That in patients manifesting "neurotic" symptoms, it is important to know whether or not the sexual relations are satisfactory, since these symptoms will often clear up miraculously when such relations can be made satisfactory by the curing of dyspareunias and psychological misconceptions. (4) A family history of cancer should be elicited if it is present. For instance, in a woman with benign uterine bleeding and a chronic cervicitis where there was a family history of cancer the treatment would incline towards removal of the uterus and cervix rather than towards the use of radium and cauterization.

For examination purposes gynæcological patients can be divided into two groups: (1) those who can come to the office; (2) those who must be examined at home in bed. If the proper facilities are available an office examination is much more enlightening than a home examination. What are the proper facilities? First of all a table with leg or heel stirrups that will permit the lithotomy position; second, a good light; third, a bivalve speculum, preferably the Graves' pattern or some modification of it.

THE ABDOMINAL EXAMINATION

Inspection.—Does the abdomen move with respiration? Is it distended? If it is distended, what sort of a contour has it from ensiform to pubes, and from side to side? The pubes-to-ensiform contour is different in different swellings. With a fibroid there is usually a gradual ascent from the pubes to the summit and a sharp drop above; with a pregnant uterus and an ovarian cyst the drop above is gradual. If the distension is due to free fluid there is a fairly sharp rise at both ends, with a flat plateau in the centre. The side to side contour with a tumour shows a rise to a central peak; with fluid there is a sharp rise on each side and a central plateau. Are fresh striæ gravidarum present?

Palpation.—If the patient complains of pain it is better to start palpating at a distance from the painful area, moving gradually towards it. This enables the patient to get used to the feel of your hand and to relax her muscles. If, in such an abdomen the tenderness increases to a maximum just above Poupart's ligament, and particularly if it is bilateral, one may safely presume that the cause of the pain and tenderness is a pelvic condition. Occasionally, a patient with low abdominal pain and tenderness will be tender in the right hypochondriac region. This is especially true of two conditions—salpingitis and ectopic gestation. In acute salpingitis the infection seems to travel up the right side to a sufficient extent to cause actual adhesions between the liver and the abdominal wall. In ectopic gestation the pain and tenderness in this area are due to the blood collecting in the right kidney pouch. It is therefore best to begin the palpation of the abdomen by starting in the left hypochondriac region and working down, before attempting the other side. In all cases where there is complaint of either acute or chronic iliac pain, one-sided or bilateral, the kidneys should be carefully palpated to rule out a renal infection. It is not so necessary actually to feel the kidney as to note whether or not it is tender. The kidney region can be palpated with one hand in the flank and one in front, or by using a hand on each side—a much better way of eliciting whether or not one side is more tender than the other. To do this the patient is grasped with a hand on each side so that the fingers lie just below the

ribs in the back; the thumbs are pressed into the hypochondriac regions when she takes a deep breath and while she lets it out. Palpation of the kidney is a little less satisfactory, using this method, but the differentiation of slight degrees of unilateral tenderness is much more exact. In the neurotic, highly-sensitive type of woman it is important to come back to the tender areas more than once. One will often find that an area that was tender before is not now tender, and that an area not tender before is now tender.

The presence of rigidity and areas of hyperæsthesia should be noted, and their extent mapped out. If a tumour is present one should try to determine whether or not it is pelvic. The history as to the location of the tumour when it was first noticed may be a help. Try to dip the fingers under the tumour just above the pubes. If this cannot be done the tumour is very probably pelvic; but if one can dip beneath it the converse is not true, since a long-pedicated ovarian cyst may quite easily be moved about the abdomen at a certain half-way stage of its growth. If it is a hard tumour and lies principally in the left abdomen, its right edge should be carefully palpated for notches. Very frequently enlarged spleens have been diagnosed as ovarian tumours, until this simple procedure made the condition clear.

The feel of a tumour is usually a help in differentiating it, but, while a fibroid usually yields the sensation of density and hardness, it may, when degenerated, feel as soft as a pregnant uterus or even a cyst. On the other hand ovarian cysts usually feel soft, but if they contain papilliferous growth to any extent they will seem solid, and sometimes when they are very tense they feel solid.

Percussion.—When the abdomen is distended it should always be percussed. If the distension is due to free fluid the dullness will be in the flanks with an area of some resonance in the mid-abdomen. With a tumour the dullness will be over the tumour area, and there will be resonance in the flanks. But if the tumour is associated with free fluid, as is so often the case with solid ovarian growths and papilliferous ovarian cysts, there will be dullness in the flanks as well as over the tumour. If the tumour is small it may be completely masked by the accompanying ascites. If the flanks are dull the

patient should be turned to one side to determine whether or not the dullness shifts. Percussion in the flanks should also be undertaken if there are signs of internal hæmorrhage, but it must be remembered that the effused blood does not usually give the characteristic dull note of free serous fluid, but something between dullness and resonance.

An ovarian cyst will yield a thrill, except under the following circumstances: (1) when it consists of a great number of locules; (2) when it contains much papilliferous growth; and (3) when its contents are very thick.

Auscultation, in the case of a large tumour, will determine whether or not a fetal heart is present.

THE VAGINAL EXAMINATION

If this examination is to be successful it is essential to get the patient into the proper lithotomy position, and it is usually on this rock that most vaginal examinations are wrecked. If the examining table is fitted with heel stirrups the patient should not take her shoes off, which she will sometimes do if not warned, since the heel of a shoe fits more solidly into the stirrup than the stockinged heel. It is now helpful psychologically to place a sheet over her knees, and for two reasons; first, the patient cannot see what you are doing and will not draw away at the approach of the speculum or any other instrument; and secondly, she does not feel so exposed. The next move is to get her to pull her clothes up under the sheet so that her legs are free and her knees can be separated. It is often difficult to persuade a patient to separate her knees; she wishes to keep them in the position of defence, and yet it is impossible to get her properly down the table unless she does so. With the knees separated she is encouraged with a hand under each buttock to slide down the table until the buttocks are well over its edge. The buttocks must be well over the edge if the speculum examination is to be satisfactory. This manœuvre is easier for the patient if the back of the table is raised so that she is in a semi-sitting position.

The vulva, perineum and anal regions are now inspected. Is the skin irritated or excoriated? Are pediculi present? Is there any discharge on the vulva, and what is its colour? Is the patient bleeding, and what is the colour

of the blood? Has the discharge an odour? If the skin of the vulva is irritated chronically a sample of urine should be obtained and examined for sugar. Is there a swelling of the vulva, and, if so, is it in the region of Bartholin's glands? Has the patient protruding piles? Are there any warts on the vulva and surrounding skin? Does the vaginal orifice gape, and if it does is there prolapse of the vaginal walls?

The labia are now separated and the urethral orifice inspected. If there is any pus around the orifice it should be wiped away and the urethra milked by putting a finger into the vagina and pressing the urethra against the pubes. If there is pus in the urethra it will be brought to view as the finger descends, and if no pus comes from the upper part of the urethra it is most important to express anything that may be in Skene's tubules at the mouth of the urethra. If any pus is obtained a smear should be made of it for microscopic examination, although if it is yellow in colour and, particularly, if it has been expressed from Skene's tubules it is almost certain to be gonococcal. Such a bead of yellow pus in the presence of lower bilateral abdominal pain and fever is therefore almost confirmatory of gonococcal salpingitis.

The presence or absence of a vaginal hymen should next be noted. The total absence of a hymen, or its replacement by hymenal caruncles would suggest that the patient was not a virgin, and should certainly be set against a denial of coitus. I am not so sure that it proves coitus absolutely, since I have seen two or three young women, whose word I felt I could trust fairly implicitly, in which a definite hymen was not present and upon whom a vaginal and speculum examination could be made without the usual virginal distress and difficulty. On the other hand the presence of a definite hymen can be a help in diagnosis. For instance, in a girl with low abdominal pain and fever, who has a virginal hymen and no vaginal or urethral yellow discharge, whatever pelvic inflammation is present is not gonococcal and would likely be either tuberculous or appendicular in origin. But *the presence of a distinct virginal hymen does not rule out pregnancy*. I have seen four cases in which girls with very definitely virginal hymens were preg-

nant. In all four there had been no penetration, but a history of "playing about" was obtained. Nevertheless impregnation without penetration is a comparatively rare phenomenon, and it is reasonably safe to conclude that a woman with a virginal hymen is unlikely to be pregnant in either the uterus or the tubes.

While inspecting the hymen one should look for the mouths of Bartholin's ducts. They will not be seen unless there is Bartholinitis, when they show up as little red dots.

The vulva may be gaping from old obstetric damage. If so, the patient should be told to strain down. A cystocele, rectocele or a prolapsing uterus may come into view. It is important to remember, however, that except in those cases where the vagina turns completely inside out, the amount of prolapse of these parts will be greater when the patient is working hard on her feet than when she is straining down on an examining table. If this fact is not kept in mind a prolapsed condition may be missed. In the case of those who come with the history that something comes down the front passage I always get them to stand up and examine them straining down in that position when the examination in the lithotomy position has proved inconclusive.

One now proceeds to the vaginal examination with the fingers. If the patient has complained of dyspareunia the hymenal region should be carefully palpated for a tender area or a tender tag. Sometimes this area or tag will be very small, yet so exquisitely painful as to take all the joy out of coitus. This area should be definitely mapped out since, if it be small, its removal may become so simple a procedure that it can be carried out under a local anæsthetic in the office.

The forefinger (lubricated) is now pushed into the vagina. It should be aimed at the hollow of the sacrum; if it is aimed horizontal with the table it will strike the sensitive area around the urethra and cause the patient to tense her muscles, or draw away up the table. Let us suppose one is dealing with a definitely virginal vagina. In such a case the finger should be introduced slowly. But in some cases, no matter how gently this is attempted, the patient is caused such pain, or is so apprehensive, that either the finger cannot be inserted completely, or, if it can be, the patient

holds herself so tautly that an examination is impossible. In such a case it is better to give up the vaginal route and try the rectal—which I shall discuss later. Occasionally there will be the case where even the rectal method causes such a tightening of the muscles that any enlightenment is impossible. Such can only be properly examined under an anæsthetic.

Let us suppose that examination is possible. With the finger in the vagina pressure is made back against the perineum—it is really against the levatores ani—until these are tired out. The patient is then told to bear down and the middle finger is slipped into the vagina. This is not always possible, and sometimes one has to feel as best one can with the single finger, but such an examination is never as satisfactory as the two-finger method, and the latter should therefore always be used if it can be. It is surprising how often this can be done where at first sight it looks impossible. The trick is to first tire the muscles out by pressure with the forefinger and to get the patient to bear down, thus farther relaxing the levatores, while inserting the middle finger.

With either one or two fingers in the vagina, a *planned* procedure should be carried out. Since the cervix is the most prominent landmark and will often yield the most results it should be felt for first. Does the patient wince when it is touched? If she does, one thinks at once of pelvic infection. But the cervix will be painful on movement in other conditions—sometimes in ectopic gestation, sometimes where there is a laceration with chronic inflammatory induration in the tissues about it, and very often in those cases that we label "pelvic neuralgia". It can be taken as a maxim that in an acute abdomen where the cervix is tender on movement the condition is assuredly pelvic, and is likely to be, in the following order of frequency; salpingitis, ectopic gestation, pelvic appendicitis, peritonitis following a septic abortion, or ovarian cyst with a twisted pedicle. I stress the importance of this sign since it is often the most valuable one gained from a vaginal examination, and may, without the eliciting of any further information, fairly settle the diagnosis in acute abdominal conditions. For instance, if it has been elicited, together with a drop of yellow pus in the urethra, the diagnosis is almost certainly sal-

pingitis; if it is associated with dark red vaginal bleeding the diagnosis is almost certainly ectopic gestation.

The next thing is to note the feel of the cervix. Has it the velvety feel of a simple erosion, or the ulcerated feel of a malignant ulcer? In the latter case push the finger into the crater of the ulcer and note if the tissue is mushy and friable, and if as a result of doing this the patient bleeds. Is there a tear of the cervix, and, if so, does it cause pain to press against the torn area? or is there a painful vaginal-vault scar associated with it? In a chronic case in which the cervix is tender ask the patient if she has dyspareunia. Is the cervix patulous, and if so can anything be felt protruding into it—a fibroid, a polypus, or the products of gestation? Is the cervix hypertrophied and hard? Has it the soft, yielding feel of pregnancy? Does it seem to lie fairly in the centre of the pelvis, or has it been pushed forward, backward, or to one side? The finding of the cervix far forward and lying directly against the pubes usually means that there is a mass in the pouch of Douglas forcing it there, since in a retroverted uterus the cervix does not usually lie directly in contact with the pubes.

The fornices are now examined in turn, making the complete circle of the vaginal vault. One should have an idea in one's mind of the pathological conditions that may cause tenderness on touching. In the lateral fornices a ureter, a pelvic cellulitis, or the scar from an old tear may be tender; in the postero-lateral the tubes or ovaries on both sides, a cancer or diverticulitis of the sigmoid on the left, or an appendix on the right; in the anterior fornix an inflamed bladder. In "pelvic neuralgia" all the fornices may be tender. Can you feel a swelling bulging any of the fornices? In what direction does such a swelling push the cervix? Is the swelling tender or not? Does it feel hard or cystic? Here again one should keep in mind the type of swelling likely to be found in each neighbourhood. For instance, a swelling in the anterior fornix is most likely to be a fibroid; in the lateral fornices, a pelvic cellulitis; in the postero-lateral fornices, an enlarged tube or ovary; in the posterior fornix, a retroverted uterus, a collection of blood or pus, a tube, or a tumour. A fibroid, of course, may cause a swelling in any fornix.

Not until this complete circuit has been made with the vaginal fingers should the bimanual method of examination be attempted. This is important. It has often been my experience that the bimanual has not added to the information already gained. On the other hand I have as often found, when hurried into doing a bimanual which yielded little information, that if I took the abdominal hand away and proceeded to search thoroughly with the vaginal fingers, I could actually discover definite lesions. This is particularly true in fat patients, and in those suffering from an acute pelvic condition where the abdominal muscles are tightly on guard.

In making the bimanual examination it is best to start by trying to locate the body of the uterus. Unless this is done you can never be sure that any swelling you may subsequently encounter is not the uterus. Since the organ is usually in the anteverted position the vaginal fingers are placed in the anterior fornix and the abdominal fingers just below the level of the sacral promontory. The two sets of fingers are brought together and the uterine body should be felt between them. If it is not felt, it is either retroverted or lying to one or the other side of the midplane. In this case the vaginal fingers are now moved to the posterior fornix and the same manoeuvre carried out. If the uterus is retroverted it should be felt. If it is not felt the fingers should be moved to each side. Having gotten the organ between the two sets of fingers, one determines whether or not it is tender, its consistency, and its shape. If it is enlarged one notes the consistency of the enlargement and whether or not the lower uterine segment is thinned out (Hegar's sign), and if it is regularly or irregularly enlarged. It should also be noted whether the organ is movable easily or fixed, and if the examination has caused any discharge or blood to be expressed from it.

Having established the position of the uterus a circle of the pelvis is made with the following possibilities in mind: There may be felt bimanually, *anteriorly to the uterus*—a tender bladder, an inflammatory mass between the bladder and uterus, a cervical fibroid; *laterally*—the mass of pelvic cellulitis, a tender ureter of pyelitis or stone, a stone itself in a ureter, a fibroid, an extension of a carcinoma of cervix;

postero-laterally—a swollen tube, an ovarian tumour, a fibroid, extension of carcinoma of the cervix, a mass of pelvic cellulitis; on the left side a mass in the sigmoid; on the right the mass of a pelvic appendicitis; *posteriorly*—swollen tubes, a pelvic abscess, a pelvic hæmatocele, an ovarian tumour, a fibroid, a retroverted uterus, and appendicular abscess.

Occasionally the mass of tuberculosis or cancer of the cæcum will be felt fairly high up between the palpating fingers on the right side, and may be either lateral or antero-lateral to the uterus. On two occasions I have encountered this, and where the mass is in a low-lying, fairly mobile cæcum it can easily be mistaken for an ovarian tumour.

Having discovered any abnormal condition in this search of the pelvis one should try to determine whether or not it is uterine, that is, can it be separated from the uterus and be moved separately from the uterus.

If a cystic swelling is found that does not move easily and presses up against the anterior abdominal wall one should make certain that it is not bladder. In some cases it is not enough to take either the patient's or a nurse's word that urine has recently been passed, since, despite such a history, a full bladder will sometimes be found when the catheter is passed. Further, in these cases it may be necessary to pass the catheter much farther in than usual before urine is obtained, as the bladder may have been drawn well up into the abdominal cavity. One is sometimes surprised to find that a bimanual examination in a woman with a reasonably thin wall and good relaxation will not even allow one to palpate the uterus. The impression is gained that there is something in the pelvis—impalpable, indistinct—that prevents an easy recognition of the anatomical parts. Perhaps I can best describe it by saying that one seems to be searching for the organs through a pelvis full of soft dough. In such cases, if the patient is asked when she urinated last, the almost invariable answer is that she has not done so for some hours. Even when she says she has a catheter should be passed. Once the bladder is empty the anatomy comes out of the fog. *Any cystic abdominal tumour associated with a mass in the posterior fornix which pushes the cervix far forward should be diagnosed a full*

bladder until the contrary can be proved by catheterization.

Having completed the bimanual the efficiency of the levatores ani should be determined in all cases of relaxed outlet before withdrawing the vaginal fingers. This is done by turning the fingers over so that their palmar surface points backwards and pressing the tips first directly backwards and then backwards towards five and seven o'clock. This will show the extent of the relaxation. If the vulvar tissues are now grasped in these three positions between the two fingers inside and the thumb outside the thickness and degree of divergence of the levatores can be more fully determined.

So far I have made no mention of conditions in the rectum. Carcinoma of the rectum may be felt on vaginal examination, either as a tumour in close association with the posterior vaginal wall, or as a tumour in the pouch of Douglas. But the commonest rectal finding is fæces. Sometimes there is so much fæcal material present as to militate against a successful pelvic examination; this is particularly true when most of the mass is high in the rectum and appears as a tumour in the posterior fornix. The easy way to determine whether or not a posterior pelvic swelling is fæces is to press hard against it; if it is fæces it will pit, in which case a rectal examination will at once clear up any uncertainty. In such a case it is well to give an enema and re-examine the patient.

THE SPECULUM

Probably the most useful type of speculum is the Graves' modification of the bivalve. There is no difficulty in inserting it into a relaxed multiparous vagina, but unless a proper technique is used in cases of tight vagina its introduction may cause a good deal of pain. The vaginal examination with the fingers has aided in relaxing the sphincter, and one now introduces the forefinger of the left hand and pushes back towards the rectum. The speculum, turned so that the blades are vertical to the table, is placed against the fourchette to one side of the finger. If the patient is now urged to bear down, and at the same time the instrument pushed in the proper direction it will go in with a minimum of discomfort. It should be directed towards the middle of the

sacrum. When it is in about halfway it can be turned so that the blades are horizontal and then shoved home. Now open the blades and try to get the cervix between them. If you fail to do this it is probably because the speculum has not been directed caudally enough. Close the blades and dip their tips. If the cervix does not now come between the blades one or more of three conditions may be present. (1) The vagina may be too long for the instrument. Get the patient to strain down, or if you have a longer speculum use it. (2) The patient's vaginal walls may be lax, and when the blades are open they force themselves between so that you cannot see the cervix. In such cases it is sometimes impossible to view the cervix unless the speculum blades are reversed so that it becomes a Sims', and lateral retractors are inserted along with it. (3) The cervix may keep slipping up to one side or the other and will not come fairly between the blades. Get the patient to strain down. Sometimes this will bring it into position. If not, close the blades, pull the speculum partly out, and repeat the manoeuvre of thrusting it in and opening the blades. In spite of this there will be the odd case in which the organ remains elusive. If completely defeated, have the patient come back another day, when it will surprise you to find the cervix between your blades at the first attempt.

Having got the cervix in the speculum you proceed to view it. If there is any blood or pus in the way wipe it clear with a sponge-holder. If it is blood note whether it trickles from the canal or comes from the vaginal surface of the cervix. If there is muco-pus hanging from the cervix, or if there is an erosion or other sign of chronic cervicitis, take a smear from it for microscopic examination. If there is an erosion of the cervix is it bleeding, or has it bled as a result of your examination? If so take a small sharp curette and lightly scrape it. A simple erosion will give a gritty sensation, and nothing much will come away on the curette but mucus. If something definite comes away, and particularly if it comes from an area that appears mushy and friable, it is almost certainly carcinoma and the material should be sent to a laboratory for microscopic examination. Occasionally a hard, nodular, bleeding type of cancerous cervix will be encountered

where you can get nothing much away with the curette. On manual examination this cervix feels thick and densely hard. Such a cervix should be diagnosed carcinoma until this can be disproved, which means until a section removed from it by the knife has been examined microscopically.

If the patient has a discharge an attempt should be made to determine where it is coming from. If there is an erosion of the cervix, or if there is muco-pus hanging out of the external os, the place of origin is clear. But if there is no evidence of cervicitis it may be difficult to determine its source. It may be coming from the uterus; it may simply be an excess of the normal secretion of the vaginal walls; or it may be caused by *Trichomonas vaginalis*. In the first two possibilities the discharge will be the typical "whites"; in the last it will be yellow in colour and will have bubbles in it. A drop of the trichomonas pus placed on a slide and mixed with water and examined at once under the microscope will reveal the motile organism.

The speculum is now withdrawn with the blades open in order to bring the vaginal mucosa into view throughout its entire length. Its colour should be noted. Is it red from irritation? Has it the purplish colour of pregnancy? Has it the little pin-point red spots seen in trichomonas infection? Is it ulcerated? Has it the strawberry appearance of actual vaginitis?

RECTAL EXAMINATION

No pelvic examination is complete without a rectal, and this should *always* be done when a vaginal has been impossible. You can feel practically everything with a rectal and rectal-bi-manual examination that you can vaginally, although the findings are perhaps somewhat blurred. In doing a rectal the same *planned* procedure should be carried out as with the other route. It is often very useful in clearing up the diagnosis of an acute abdominal condition. If, on reaching up as far as you can on the right you cause the patient to wince more than you could on pressing far up into the right vaginal fornix, the condition is probably appendicitis.

So much for an examination in the office.

EXAMINATION IN THE HOME

Examination in the patient's home presents another problem. It is not likely to be as satis-

factory, because it will have to be carried out in bed. Two procedures can be followed. The patient can either lie across the bed, with her buttocks well over the edge and her knees caught over the back of two chairs (with cushions interposed); or she can be examined in the Sims' position. If you use the first technique you proceed to carry out the examination very much as on your office table. If you use the Sims' position you must undertake a different technique. Using this position, the best results will be obtained if you get the patient lying diagonally across the bed with her buttocks over the edge. The upper knee must be thrown over the lower, her under arm should be out behind her back, and her upper shoulder should be as far over as possible, so that she is almost lying on her face. You now proceed to make your vaginal examination in the same *planned* way as described above. Then, turning your Graves' speculum into a Sims', you insert it and draw the blade backwards and slightly upwards to bring the cervix into view. Having finished the speculum examination you reinsert your fingers into the vagina, get the patient to turn over on her back, and proceed with the bimanual. It is my own conclusion after considerable experience examining in both the office and the home that the latter is never as satisfactory as the former.

There are three types of cases in which it may be necessary to examine the patient under anæsthetic—(1) the very fat patient; (2) the very resistant and apprehensive patient; (3) the patient who is bleeding irregularly and in whom a diagnosis of intracervical or corporeal cancer is a possibility and can only be cleared up by an exploratory curettage.

I have attempted in this paper to show that it is not always necessary for the purpose of diagnosis to feel or see actual pathological lesions. I want to drive the point further home by saying that the man who is so overcome by disappointment in not feeling or seeing gross pathological changes that he will not attempt to

build up a diagnosis from all the *little departures from normal* he has noted, will never succeed in pelvic diagnosis. I have illustrated this point with regard to salpingitis and ectopic gestation by showing how in an acute lower abdomen where there was pus in the urethra and muco-pus hanging from an angry cervix, with tenderness on moving the cervix and pressing up into the postero-lateral fornices, that the diagnosis is most likely to be acute salpingitis, and where in the same acute abdomen there is dark red blood coming from the cervix with the cervix tender on movement and tenderness in one postero-lateral fornix the diagnosis is most likely to be ectopic pregnancy. Similarly in cases of benign uterine bleeding, if you have satisfied yourself that the bleeding is from the uterine endometrium, you are unlikely to feel anything on bimanual examination that will add greatly to your understanding of the case.

In all cases where there is irregular uterine bleeding and you suspect carcinoma—which means practically all cases of irregular bleeding—you should persist with your examination, even to the length of a diagnostic curettage under anæsthesia, until you have eliminated cancer. And if you do not feel competent to do this you should send the patient to someone who is.

The following may prove useful to those wishing to perfect themselves in the examination of the gynæcological patient.

1. Learn the normal by examining as many normal pelves as possible. This can be done quite legitimately by examining all your puerperal women six weeks after delivery.

2. Gain experience with the abnormal by examining *all* women coming with gynæcological symptoms.

3. Look out for the little signs and the gross signs will look after themselves.

4. Consider every irregularly bleeding woman to have carcinoma until you or someone else can prove she hasn't.



SOME SIMPLE OBSERVATIONS AND PROCEDURES OF ASSISTANCE TO THE PRACTITIONER IN THE DIAGNOSIS AND ERADICATION OF TUBERCULOSIS*

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PULMONARY tuberculosis is a concealed disease in the early stages and is difficult to diagnose. Otherwise, the vast system of clinics and consultants that now extends throughout the world would never receive the cooperation of the general practitioner or the financial support of the public. With the assistance of diagnostic clinics and other modern facilities, the plan by which a general practitioner can rid his community or practice of tuberculosis is simple and practical. If the State plays its part by providing accommodation for the treatment of the sick and "spreaders", the practitioner, once he develops a nose for this disease and the habit of following its trail of infection, can carry out this procedure in the course of his work-a-day practice with little expense or loss of time.

During the past twenty years the family physician, by the use of discovered prophylactics, has controlled and reduced to a minimum the death rate from diphtheria. By the prompt use of antitoxin he can modify the course of scarlet fever cases, discovered early, and can protect the immediate contacts. However, where the population is concentrated, little resistance can be offered to the acute infectious diseases, except those for which a prophylactic has been discovered; chicken-pox still runs through the community; serious epidemics of whooping-cough run their course; measles sweeps our towns, cities and villages, and even our rural communities. On the contrary, the infectious disease tuberculosis, although hidden in its early stages, is sufficiently slow-moving and chronic that it can be diagnosed in most cases before its seeds are shed. Although the early diagnosis of this disease requires many facilities, the diagnostic procedures in themselves are simple. The most

important of these are: a history, to determine exposure, family resistance and symptoms; a tuberculin test for infection; a sputum examination for confirmation of gross lesions; physical examination for moderate lesions; x-ray examination for small lesions; and the use of diagnostic clinics for consultation in doubtful cases. By early diagnosis, the segregation of active cases, and the examination and early treatment of those contacts infected by these spreaders, tuberculosis can be controlled and the disease gradually reduced to a minor cause of death in any community.

The essential qualification of a family physician for the accomplishment of this work is interest in the eradication of tuberculosis. The next thing of importance is a certain keenness about the epidemiology—a knowledge of highly tuberculized groups, and ability to follow trails of infection. Then there is his scent for detecting tuberculosis, that is, his familiarity with the sign and symptom-complex of tuberculosis. Finally, there is his resourcefulness in making use of tuberculosis clinic facilities provided for consultation.

TUBERCULIZED GROUPS

First of all, among the affected class there is a certain susceptible age-group. In the agricultural Province of Saskatchewan the fatal age-period of tuberculosis exhibits its maximum mortality between 28 and 30 years. It has been recognized by insurance companies that persons who are absolutely free of this disease at the age of thirty-five, even though they have a bad family history and have had previous contact with active cases, are average risks for insurance.

Of much greater importance, however, in an agricultural community is the age-incidence of maximum morbidity, because the period is narrower. The age of maximum breakdown

* Read at the Annual Meeting of the Canadian Medical Association, Calgary, June 20, 1934.

from this disease in western Canada is between 18 and 24 years. In this age-period the incidence of tuberculosis is nearly twice as high as it is ten years before or ten years after. Therefore anyone between the ages of 18 and 24 who is at all suspected of tuberculosis is doubly suspected, simply because of the fact of his age.

Next to age-incidence comes racial origin. In Saskatchewan at the present time we find that although the Indians constitute less than 2 per cent of the population they account for roughly 25 per cent of the deaths from tuberculosis. The tuberculosis death rate among these aborigines is from ten to twenty times that of the surrounding white people. Second to Indians come half-breeds and other persons with lesser crosses of Indian blood.

There are certain predisposing occupations which must always be kept in mind when searching for tuberculosis. Although in western Canada we have few of these, nevertheless many of our immigrants have been engaged in such occupations before coming to this country. The more serious of these are the dusty industrial occupations. By far the most important among these is quartz-mining of any type where silica dust is present, especially quartz gold-mining. Among persons who develop silicosis there is a tuberculosis death rate as high as among persons who have been raised in the environment of a tuberculous family. There are certain other highly infected groups which require careful observation just because of this infection. These are nurses, immigrants, and family contacts.

In this and every other country the high incidence of tuberculosis among nurses is probably entirely due to infection. In 1933, 5 per cent of all patients under treatment in the sanatoria of Saskatchewan were nurses or nurses-in-training. The incidence of break-downs among nurses-in-training in general hospitals during the period 1930 to 1933 was 12.7 per thousand. This is twelve times the incidence of known break-downs from tuberculosis among the general population which was 1 per thousand. It is eight times the incidence found among 3,376 normal school students, most of whom were females and of approximately the same age-group. These students were examined by physical and radiographic methods between 1930 and 1933. The incidence

of tuberculosis break-downs in this normal school group was 1.5 per thousand.

Immigrants are also a marked class for high incidence of tuberculosis. These people come from countries where both the population and the cattle are much more highly infected than in western Canada. We have made a study of tuberculosis mortality among them, which study shows that as a class the European foreign immigrants have a mortality rate over twice as high as our native white population. The keen mind for tuberculosis considers the higher probability of tuberculosis among them. These are the less known classes which have a high incidence of tuberculosis and which are often overlooked by the physician. The fact of this high incidence in these groups should be the common knowledge of every family physician. There is little excuse for neglect of their consideration.

Following these remote, but important, classes, we now come to the one group in every community which is usually investigated, that is, contacts with the disease, or those intimately exposed to infection. Extensive examination of family contacts in recent surveys, both in Europe and in America, has shown that the incidence of positive reactors to tuberculin is usually two or three times as high among family contacts as it is among the average children of the community. A recent survey of 845 Saskatoon school children showed an incidence of 50.0 per cent among contact families compared with 14.08 per cent in the entire group. Therefore, apart altogether from family resistance, there is increased infection in these families. This alone should make them the object of suspicion. In Saskatchewan in the years 1931, 1932, and 1933, 8,786 contacts were examined. This is 8.6 contacts for each death that occurred. Of these, 655, or 7.45 per cent, were found to have active tuberculosis and were referred to the sanatoria for treatment. In a similar, but less exposed, class, are the playmates, pals and close associates of children and young adults who break down with tuberculosis, however resistant their families may appear to be.

THE GROUP WITH THE SIGN AND SYMPTOM COMPLEX OF TUBERCULOSIS

Impressive and important as the family contact group is, with its incidence nearly fifty

times as high as the Normal School group, I must assure you that in areas such as western Canada, where the death rate from this disease is relatively low, the known family contacts are not the principal source of tuberculous persons who enter the sanatoria. A study of 1,000 active cases breaking down from this disease, as well as a study of the active cases now resident in one of our institutions, revealed the fact that only 30 per cent of the patients under treatment had a definite history of a death from tuberculosis or of a known case of tuberculosis in their family. The remainder, or 70 per cent, were derived from the more remote suspect classes mentioned before, and from sporadic cases among non-suspected classes who had no knowledge of where the disease might have been contracted. This 70 per cent were referred to us by general practitioners, not because they had a family history of the disease but because the physician recognized in their case what he considered a suspicious tuberculosis complex. When further analyzed, the principal features of the sign and symptom complex which leads the physician to refer these pulmonary cases to our clinics, sanatoria, and consultants for examination proves to consist of: (1) pain in the chest; (2) prolonged cough; (3) loss of strength; (4) toxæmia; (5) blood spitting; (6) occasionally, only hoarseness; (7) occasionally, fistula in ano; (8) rarely, only gastrointestinal symptoms. A small number of these cases were suspected simply on a "hunch", from failing health which could not otherwise be explained.

Since 1929, we, in Saskatchewan, have had the advantage of free treatment for all who have active disease. During 1931, 1932 and 1933, since the full weight of the anti-tuberculosis program has been assumed, an analysis shows that among those referred for examination because they had a symptom-complex 12.4 per cent proved to have active tuberculosis.

To stress the relative importance of tuberculized groups, let us summarize the proportion per 1,000 of patients admitted during the past three years from the various groups dealt with:

(1) From the general population, 1 case admitted per 1,000; (2) from the Normal School group, 1.5 cases admitted per 1,000; (3) from nurses-in-training, 12.7 cases admitted per 1,000; (4) from Indian school children, 50.4 cases found to have active lesions; (5) from family contacts, 74.0 cases admitted per 1,000; (6) from suspects referred by physicians, 124.0 cases admitted per 1,000.

CLEARING UP TUBERCULOSIS IN YOUR PRACTICE

With these facts regarding tuberculized groups and the symptom-complex in mind, and with an average knowledge of physical signs, how will the general practitioner go about eliminating tuberculosis from his practice? At first thought this may appear to be an almost insurmountable task. However, this impression is far from the truth. Our experience is that many physicians equipped with clinical experience, a thermometer and a stethoscope, and making use of consultation facilities available, have cleared up bad nests of tuberculous disease.

Where there is a white death rate of around 40 to 50 per 100,000, such as maintains in these western provinces, mathematics will tell you that there will be just about 1 death per year among each 2,000 people. Two thousand people happens to be about the average practice of a family physician in the west. In practice it works out that where a death occurs there are just over 8 contacts requiring investigation. Since observation is required at least annually for a period of three or four years, the average family physician, after a period of five years, would have an average of forty contacts under observation. These are in addition to the suspects who turn up from time to time with the symptom-complex. This cannot be looked upon as a very serious burden by any physician. The careful observation and care of this group is not too much to expect the general practitioner to contribute towards the eradication of this dread disease, even if many of them are unable to pay anything for their medical supervision. The easiest way to unburden yourself of this indigent class of patients is to eradicate the disease. I believe that with the provision of free tuberculosis clinics, free treatment, and adequate sanatorium beds, this can be done with very little expense on your part by making a "dead set" on all possible spreaders.

INVESTIGATION OF POSSIBLE SPREADERS

In every community there are those patients, young and old, who have had chronic cough and expectoration for years. In the corner of your medicine bag carry a half dozen ready-to-mail sputum bottles, so that every time you are consulted by a person with this chronic cough you may secure a specimen of sputum. These sputum containers can be supplied by the Department of Public Health or by the Sana-

torium. A three-cent stamp will take the specimen to the provincial laboratory or to a sanatorium, and will insure a careful examination of its contents. You will be surprised how many of these sputum samples will contain a diagnosis. This will be evident to you when I tell you that of the adult pulmonary tuberculosis under treatment in the Saskatchewan Sanatoria during 1931, 1932 and 1933 71 to 77 per cent had tubercle bacilli in their sputum after admission. This simple diagnostic effort consumes practically no time, and need not delay the physician more than a few minutes, whether he sees the patient in his office, or whether he accidentally comes across a chronic cough when caring for someone else in the home. Eliminate the spreaders from all chronic coughers in your community or practice.

In addition to the ready-to-mail sputum containers every physician should carry in his medicine bag a small bottle of old tuberculin, and a von Pirquet scarifier. When less than 15 per cent of school children in a city the size of Saskatoon are positive reactors, and less than 23 per cent of the pupils in the Saskatchewan Normal Schools, which group represents the age of maximum break-downs, are positive reactors, the tuberculin test becomes a valuable test for exclusion. The von Pirquet method is not quite so accurate as the intracutaneous injection of tuberculin. Nevertheless, I am advocating it for general practitioners because it is more practical. The old tuberculin diluted for the intracutaneous test deteriorates in a couple of weeks after it is diluted. The von Pirquet application of tuberculin, if carefully done, gives results almost as reliable as the intracutaneous method. If the von Pirquet test should be unsatisfactory or negative, and the case remains suspicious, I would then follow this test by an injection of 1 mg. of old tuberculin. (One part standard old tuberculin to 99 parts sterile saline; give 0.1 c.c. of this dilution intracutaneously, which contains one milligram of old tuberculin).

Second to the cases with chronic cough are those with only pain in the chest. In every study we have made of symptoms pain in the chest has emerged as the symptom of greatest importance as an indicator of pulmonary tuberculosis. Further, it is probably the most common complaint among patients under treat-

ment in the sanatoria, whether it is from pleurisy with effusion, dry pleurisy, or simply pain in the chest of a patient who is not feeling well. The only sufficient investigation of such cases is a careful history and a thorough physical examination. Where no definite signs are found, do a tuberculin test. All persons in the susceptible age-group who have had pain in the chest with physical signs or with positive tuberculins, even in the absence of physical signs, should be x-rayed at the first opportunity. Of first importance are those persons consulting you who have a symptom complex suspicious of tuberculosis. If the physical examination is negative and the patient is under thirty-five years of age, it is worth while doing a tuberculin test. A positive tuberculin test in such cases necessitates further observation, and the patient should be routed to the nearest clinic or sanatorium for x-ray examination. If any sputum is present, a sample should be secured and forwarded to the nearest laboratory or sanatorium for examination.

One other important group remains, and that is the contacts with active cases discovered during the year, as mentioned before. Irrespective of their health or physical condition, a tuberculin test should be made on these children and young adults. A general physical examination should be carried out to determine predisposing causes which would tend to debilitate the child. Advice should be given regarding the importance of maintaining good general health and nourishment. Any of them showing a positive tuberculin test should be sent to the nearest clinic or sanatorium for x-ray examination. The same procedure should be carried out once a year for at least three years following the removal of the active case from the family.

In practice the examination of suspects and contacts at clinics and sanatoria is accomplished in different ways by different practitioners. Some of them round up a car-load of suspects, and personally escort them to the clinic or sanatorium, where they assist in the examination and gain personal experience which they consider remunerates them for the trip. Others, when the patients have no money or facilities to enable them to go to the clinic, arrange to have secretaries of municipalities or interested neighbours drive them to these centres of diag-

nosis. Arrangements can often be made to have contacts examined when they come to visit their sick relatives in the sanatorium. There appears to be no obstacle of time or distance too great to prevent interested practitioners from arranging for the re-examination of suspected cases.

In addition to these medical efforts a persistent educational campaign for the testing and elimination of tuberculous cattle should be maintained in your community. Literature is available regarding what should be known about human tuberculosis, and also regarding a tuberculosis-free milk supply for the home. This literature should be distributed where it will do most good.

CONCLUSION

The suggestions I have made centre around the general practitioner, who, in the rural districts of western Canada, is also the Medical Health Officer. Under our health laws tuberculosis is classed as an infectious disease.

The plan I have suggested for the physician or medical health officer consists in the segregation, education and treatment of "spreaders"; the discovery and early treatment of those infected by these spreaders; and the education of the entire people regarding the prevention of tuberculosis.

This case-finding effort on the part of the physician, first, for the purpose of early diagnosis in order that the best possible chance for recovery will be assured, and, secondly, for the purpose of discovering the case before the disease has had time to spread to others, will of course be almost fruitless unless it is supported by segregation. The sick and spreaders should be removed to a sanatorium where all facilities are available for the most specialized treatment, and where they will receive a thorough education regarding their personal habits and the

technique necessary to prevent the spread of the disease. We have found that physicians are very anxious to do their part in the discovery of the sick and of the spreaders. However, efforts on their part are unavailing unless the people and the province itself take responsibility for providing sanatoria where these sick and spreaders can be segregated, educated, and treated.

The average physician who signs one or two death certificates for tuberculosis each year may consider that too much ado is being made about tuberculosis. This impression is not borne out by facts. When you know that the age of maximum mortality from tuberculosis in Saskatchewan is between 25 and 30 years, and that a study of the causes of death during the past six years has shown that tuberculosis has been the cause of 37 per cent of all deaths from endemic, epidemic and acute infectious diseases, you realize that even in this country, where there is a low tuberculosis death rate, tuberculosis is still by far the most fatal of all infectious diseases.

In the educational campaign that is necessary to inform the public regarding the treatment and prevention of tuberculosis a great deal must be said about the sanatoria, tuberculosis clinics, and travelling consultants, and often very little is said of the family physician who contributes so much in the effort to eradicate tuberculosis. It will interest you to know that half of all cases discovered in Saskatchewan are definitely diagnosed by the family physician without assistance, and just over half of the remainder are suspected and referred by them. From this you will realize that in areas where there is a scattered population, even though there are ample beds for treatment and adequate facilities for diagnosis, the efforts of the family physicians largely determine the efficiency of an anti-tuberculosis program.

BLOOD GROUP AND RED CELL DIAMETER.—A. Pijper adduces evidence from his own investigations and from a study of the literature that there is a definite correlation between the blood group of a person and the diameter of his red blood corpuscles. He believes that, on the average, persons with blood group "B" have smaller cells, those of "A" larger cells, and those of "O" cells of an intermediate size. His work was based on the examination of forty-eight healthy university students, the mean diameters of the erythro-

cytes being assessed by the diffraction method. Considerations of this kind would explain the discrepancies between the estimated red cell diameters of Price-Jones in England and Wischniewsky in Moscow. In England the proportions of the population are about 46 per cent in the "O" group; 43 per cent in the "A"; and 7 per cent in the "B" group. In Moscow the approximate relative percentages are given as 60, 20, and 20. By making allowance for the differing blood group representation, the discrepancy is abolished.—*South African Med. J.*, Oct. 13, 1934, p. 703.

PULMONARY EMBOLISM*

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THE question of the occurrence of phlebitis and pulmonary embolism is undoubtedly an important one. The solution of the problem may ultimately rest with the discovery of those elements in the blood or changes in the vessel walls which bring about the thrombophlebitis. However, it has for some time seemed to me that benefit could be derived from a consideration of certain clinical features connected with the phlebitis. The following is an attempt to point out some of my observations in this regard, chiefly post-operative, and an appeal for further observation.

There are two kinds of pulmonary embolism, fatal and non-fatal, the difference being explained by the size of the embolus and its consequent relation to the size of the pulmonary artery it occludes, with the resultant sudden stress on the right side of the heart and engorgement of the venous circulation. At autopsy in the fatal case the embolus is found to block completely, or almost completely, the pulmonary artery at its bifurcation, or either the right or left vessel just beyond the bifurcation. If the embolus is small enough to slip past these main trunks before it lodges the strain on the circulation is reduced so that it recovers and death is averted. The result is a pulmonary infarct which in the majority of instances resolves. I will mention later a small group in which recovery from embolism has followed embolectomy in cases which otherwise might have proved fatal.

The source of the embolus is always the same, namely, a thrombus in the venous systemic circulation. As a great number of pulmonary emboli occur following abdominal operations, a certain misapprehension exists that the embolus may have its source in a mesenteric or other thrombus in the portal circulation. This is obviously not the case, as an embolus from such a source would pass to the liver and never reach the heart. Such mesenteric thrombosis

does occur after operation. Its occurrence, fortunately, is rare, and it is seldom recognized except *post mortem*. The possibility exists that the primary thrombosis may be in the right side of the heart, notably the auricular appendage, the pulmonary artery itself, the proximal side of the portal circulation, or in the left side of the heart and pass through a patent foramen ovale. As there is no way of diagnosing the existence of thrombosis in any of these situations, we are not concerned with them in the present discussion. The pulmonary embolus, then, arises in a systemic vein, is carried through ever-enlarging veins to the right side of the heart, and thence to the pulmonary circulation, where it must ultimately lodge.

With regard then to the systemic thrombophlebitis there are two kinds, the recognized and the unrecognized. When the phlebitis is recognized and the necessary precautions taken, the occurrence of embolism is reduced to a minimum, because, as a rule, the embolus is dislodged by some effort on the part of the patient, and such efforts are equally reduced to a minimum. On the other hand, when the phlebitis is unrecognized and no precautions are taken embolism is at its maximum. To this latter group belong, I believe, all the cases complicated by fatal pulmonary embolism and the majority of the non-fatal ones.

Let me relate two significant incidents in my experience with this condition. We had in different hospitals two patients convalescing from abdominal hysterectomy. The first one, on her fifth post-operative day, had complained of a pain in her left hip. This was of moderate severity, lasted a few hours, went away entirely, and did not come back. It was accompanied by a very slight rise in temperature in the evening, which had subsided by the morning of the following day and did not recur. On the tenth day, the patient was normal in every way as far as could be discovered by a careful examination. I left orders for her to get up, which she did about four o'clock that after-

* Read before the Section of Surgery, Academy of Medicine, Toronto, April 17, 1934.

noon. At four-thirty o'clock I was called by the intern and found that the patient was dead. Post-mortem examination revealed a pulmonary embolus.

The second patient had been operated upon a few days later than the first one. She also had, on her fifth day, a similar pain in her hip, a similar rise in temperature, both of very short duration. Her tenth day happened on a Sunday, when the surgeon and I were accustomed to make rounds together. This patient was feeling very well and welcomed us with an enquiry as regards getting out of bed. I pointed out to the surgeon the slight rise in temperature which had occurred five days previously, reminded him of the pain in the hip which had occurred at the same time, and drew attention to the similarity of the two cases. However, after due consideration, and chiefly because as far as could be discovered at that time there was nothing wrong with her, permission was granted the patient to get up. She did so that afternoon, and about four o'clock I was called and informed that she was dead. Autopsy again showed a pulmonary embolus as the cause.

I have cited the foregoing incidents with the hope that you are now asking yourselves the question, as I did and have been doing constantly since, "Are there any clinical signs or symptoms which would lead us to suspect the existence of a thrombophlebitis?" The question is one not alone for the surgeon, for pulmonary embolism does not occur only after operations. Before recent years, when surgery has become so common, the majority of cases were reported after medical conditions. They occur, for example, after influenza, pneumonia, typhoid fever, fractures, parturition, and as a complication of simple thrombosed varicose veins.

There are first of all those cases in which the diagnosis of phlebitis is, or soon becomes, obvious. There is localized pain, elevation of temperature, swelling of the limb, a palpable thrombosed and tender vein. With these we are not directly concerned, although I have seen a patient, a few days following the acute onset of a phlebitis, with an enormously swollen leg, audaciously being helped out of bed! Let us turn then to the patient who shows no gross evidence of phlebitis, and see if there are any

signs leading us to suspect the existence of one, or to positively diagnose it. These are four in number. The first is rather indefinite and hard to describe; it has to do with the whole general appearance of the patient. He has a sort of greyish, unhealthy look, appears restless and ill at ease, a definite suggestion that all is not right, though there have been no symptoms and nothing can be found on examination. There may be a very little blood-stained serous discharge from his wound. I have noted this appearance particularly after operations on the abdominal wall, the repair of herniæ, and have seen several without other indication develop embolism.

Second is the symptom of pain. This may occur at any time, usually in the first few days after operation, but it may be postponed until after the patient has been allowed up for the first time, or even until after discharge from the hospital. The pain may be severe or at times so slight as to escape mention by the patient unless definite enquiry is made for it. It may be of long duration and relatively constant, or may last but a few hours and entirely disappear. Confusion may arise with the expected pain of the operation, but as a rule the radiation is distinctly different. It may occur anywhere in the leg, being referred to the tibia, femur, hip, or to any of the muscles of the leg, notably the calf muscles, or to the groin. The pain may be deep in the pelvis or referred to the crest of the ilium or to the back. The pain and its radiation is distinctly not abdominal, but rather peripheral. Examination reveals no explanation for it. There may be questionable tenderness over the points to which it is referred. There may be the very slightest, perhaps only a suspicion of, pitting on pressure over the lower end of the corresponding tibia or beneath the ankle. A very slight transient rise in temperature may accompany it.

The third sign is an unexplained rise in temperature occurring from the fifth day onward, which may be slight or as high as 103 or 104°. It may be transient, irregular and persist, or constant for a period and gradually subside. After operations, as an explanation for such a temperature, I have been led to consider first, a deep infection in the wound, and, secondly, a phlebitis. Where no operative wound exists, as in fractures, particularly of the pelvis, I believe it is the primary consideration.

A patient showing any or all of the above signs may of course develop the unmistakable local evidence of a phlebitis. On the other hand, a patient showing any, all, or none of them may develop the fourth sign, which is absolutely diagnostic, namely the occurrence of a pulmonary embolus. It may seem superfluous to say this, but it is not so, I believe, on account of the frequent errors in the diagnosis of pulmonary infarction.

The occurrence of a pulmonary embolus, fatal or otherwise, is one of the most dramatic occurrences of surgical practice. So much so that the nature of it, apart from all other considerations, is practically diagnostic. On the one hand there is the sudden death of an apparently normal patient; on the other, in a similar patient, there is the onset of severe pleuritic pain and dyspnoea. In either case the surgeon is practically helpless, death resulting before he can reach his patient, or in the non-fatal case the danger point having been passed before the onset of the pain. Time has elapsed after the lodgment of the embolus for infarction of the lung to occur and the pleuritis to develop. There is a small group, probably due to partial obstruction of the pulmonary vessel, in which a period of time elapses between the lodgment of the embolus and presumable death. From this group comes the small reported series of successful removal of the embolus.

In the other non-fatal cases the signs are pain and dyspnoea, cyanosis, if the embolus is of large size, elevation of pulse and temperature, an area of consolidation in the lung with a friction rub. Later, coughing up of bloody sputum may or may not occur. The initial symptoms are always much more severe and distressing to the patient than the physical signs would indicate. With such a situation, beware of the diagnosis of pneumonia or pleurisy. A pulmonary embolism has occurred, and, let me emphasize, this always means that a systemic thrombophlebitis has existed, or exists, in spite of the absence of other signs. The reason I emphasize this is because the embolism that has occurred may be the result of the separation of only a small part of the venous thrombus, or if with this embolus the whole thrombus has separated, a fresh one may form at its old site and again be unrecognized. The recovery from the chest signs of infarction

is often very rapid, taking only a few days. Precautions may therefore be relaxed in the presence of the remaining part of the thrombus or of a new one, either of which may be symptomless until the occurrence of another embolism which may prove fatal.

The question now arises: To what extent should one take the necessary precautions to try to avoid embolism if the phlebitis is merely suspected? Undoubtedly, embolism does not invariably occur as a complication of phlebitis, witness those which happen long after the patient has left the hospital, as long as five weeks after operation. It will also occur in spite of precautions. However, I believe that in the presence of any of the above signs a patient should be kept quiet in bed, with the most careful nursing, for a period of at least ten days or better fourteen. This is time for the main part of the thrombus to become sufficiently organized as to be adherent. Should an embolus then occur, it would in all probability be a small one and non-fatal.

In this discussion I have omitted to mention the measures variously advocated for the prevention of phlebitis, such as pre-operative diet or administration of anti-coagulants, careful surgical technique, early movement and massage, administration of thyroid extract. I have not discussed the possible blood and blood vessel conditions, which would tend to cause the phlebitis, and the various blood determinations which would point to its diagnosis. These are complicated and have made an attempt to reduce the diagnosis to one of clinical signs. I have merely mentioned the possibility of successful embolectomy in the treatment and have not touched upon other treatments, such as artificial respiration, the administration of carbon dioxide and oxygen in a tent. The solution of many problems connected with the prevention and treatment of pulmonary embolism still remains for the future. Meanwhile, does not the possibility exist that every patient with a phlebitis may at some time during his course show a symptom which, being observed and properly interpreted, leads to its diagnosis? Therefore, when embolism has occurred let us not treat it as unavoidable and do our best to forget it. Let us go back over the patient's record. Also, as a precaution, let us watch our patients carefully for signs and symptoms which may mean

the possibility of the presence of a thrombophlebitis. I have mentioned four. And such signs being discovered, let us take such measures as are possible to try and avoid the occurrence of the common and always serious complication of pulmonary embolism.

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THE TREATMENT OF NAIL PUNCTURES

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THE rôle of the medical man in modern industry is primarily that of prevention, both in the sense of prevention of injury by the application of his medical knowledge to bring about safer working conditions, and also in the prevention or lessening of lost time, once the accident has taken place. Any type of injury, small or large, once it has occurred, carries with it, potentially or otherwise, lost time. If the accidents are small and multiple the lost time assumes a large economic importance, both to the employer and the employed. It is ever the duty of the industrial medical officer to see that measures are employed to prevent or lessen injury and sickness as far as possible. Once the accident has occurred, the rôle of prevention is still his, to carry out proper and efficient treatment so that the lost time and earning power of the injured may be interfered with to the least degree. In a large construction work minor accidents are extremely common, and any of these accidents may become major if treatment is delayed.

Forming a large percentage of accidents in construction, where wood forms and trestle work are used, are nail puncture wounds of the feet. Nail punctures may be very minor or they may be very serious, or, again, what was a very minor injury at first may become very serious owing to blockage of the entrance of the wound by the inverted skin flap and the sealing-in of microorganisms, with resulting local abscess-formation or cellulitis. At the Beauharnois

power development, where the statistics for this report were collected, prevention of this type of injury was carried out at all times. All lumber containing nails was piled. The men were instructed to wear heavy-soled shoes, but the very nature of the soil through which the canal was built necessitated the frequent wearing of long rubber boots, with the result that nail punctures were quite common.

In the period from January 1, 1930, to September 30, 1932, when active work was carried out on the construction, the lowest number of men employed was 565 and the highest was 3,534. The daily average was 2,106; and the total man-hours were 19,430,992. The work was carried out under all sorts of weather conditions, winter and summer. During this period there were 3,401 nail punctures, a very large percentage of which were in the feet. They comprised 40.85 per cent of the total accidents, minor and major, which took place during the construction. It is interesting to note here that minor accidents, such as sprains, puncture and lacerated wounds, and foreign bodies in the eye, comprised 93.60 per cent of the total accidents. There were in all 8,306 accidents.

But it is principally the nail punctures of the feet that are of interest to us in this report. In the total of 3,401 punctured wounds there were 9 cases in which there was a loss of time—a total of 13½ days, that is, 0.21 per cent of the total lost this time. In these 9 cases one man lost 3 days, and he did not report the accident

to his foreman until four days after the accident, and then only because the foot was painful. On examination there was infection sealed in the track of the puncture and hot fomentations cleared this up in three days. The other patients lost on the average one day each, and this because the area was painful. None of the patients were eligible for compensation for the loss of time, nor was there any resulting disability.

The procedure laid down to be carried out in all cases of this type was as follows. As soon as the workman suffered a nail puncture of his foot or hand he reported immediately to his foreman. Here the workman's responsibility ended and it became the duty of the foreman to send the man to the nearest divisional doctor immediately. No first aid was given on the job, except to cover the wound with a sterile dressing and bandage.

On reporting to the doctor, the wound was examined, the skin cleansed with iodine, 2.5 per cent and the skin area for 1 to 2 mm. around the puncture wound was cut away with a sharp scalpel, removing at the same time the flap of the skin which is always inverted into the nail track. This gives sufficiently free access to and from the nail track. The same result may be obtained by making a crucial in-

cision at the entrance wound and turning out the flaps and cutting away the edges. The wound was then examined for any foreign material, such as a piece of clothing, which may be carried in, especially by a rusty nail. The nail track was then swabbed out along its whole length with 5 per cent iodine by means of absorbent cotton on an applicator. A dry dressing or gauze soaked in alcohol was applied externally and the man reported for work. He reported to the doctor on the following day, when the superficial wound was cleansed and a dry dressing applied. Few cases required such supervision for more than three or four days.

The objects of cutting away the skin around the puncture wound, thus forming an inverted funnel of the wound, are to allow drainage, to remove the flap of skin which is always inverted, to allow for proper exploration of the wound for foreign bodies, and lastly to permit sterilization of the track.

While this treatment may seem, at first sight, to be drastic, yet if one receives these patients a short time after the accident there is a certain anæsthesia of the part which reduces the discomfort of the treatment and the results obtained in this large series justify, I think, the means adopted.

THE INCIDENCE OF GOITRE AMONGST SASKATOON SCHOOL CHILDREN — 1934

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Saskatoon

THE following survey in regard to goitre was undertaken in our Saskatoon public schools in April and May, 1934. Five thousand eight hundred and eight children were seen. Their ages ranged from six to twenty-four years. All were public school children. Data regarding their ages, social conditions, sex, racial origins, and degree of goitre if present, were compiled and are herein presented. A total of 718 cases of goitre were found.

1. *Severity*.—We divided the cases found into "slight", "moderate", "large" and "toxic". No toxic cases were seen. Enquiry revealed that no children were absent from school because of goitre, and none were in our hospitals

at the time of the survey under treatment for this disease only.

We considered as "slight" those goitres that were just palpable, and which we thought were probably physiological; "moderate", goitres easily palpable and usually visible, and which we believed should be put under immediate

TABLE I.
SEVERITY

	Number	Percentage
Slight	504	70.1
Moderate	212	29.5
Large	2	0.2
Toxic	0	0.0
Total	718	100.0

treatment; "large", those which were very large and which we believed should be treated surgically; and "toxic", those with toxic manifestations, such as rapid pulse, tremor, etc. Table I gives the degree of severity of the cases found.

2. Distribution according to sex.

double that of boys, and the goitre tended to be larger in size.

3. Distribution according to age.

As will be seen in Table III, the maximum number of students in any one age-group was seen in those twelve years of age. Also, most of our students are out of public school by the

TABLE II.

SEX

Sex	Total students		Slight		Moderate		Large		Total goitres		Incidence per hundred
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	
Male	2,963	51.0	200	27.8	64	8.9	1	0.1	265	36.9	8.9
Female	2,845	49.0	304	42.3	148	20.6	1	0.1	453	63.1	15.9
Total	5,808	100.0	504	70.1	212	29.5	2	0.2	718	100.0	12.3

The influence of sex is seen in Table II. The sexes of the students studied, 5,808 in all, were approximately equal, 49.0 per cent being girls. Sixty-three per cent of our cases were found amongst the girls. The greatest influence of sex was seen in the group of "moderates", where nearly two and a half times as many cases were found amongst the females as amongst the males, whereas in the "slight", only 50 per cent more cases were found amongst the females. Further, 75.4 per cent of all goitres amongst boys were classified as "slight", as against 64.9 per cent amongst girls.

The incidence per hundred students in the whole group was 12.3. Amongst the boys the incidence was 8.9 and amongst the girls 15.9. Thus the incidence amongst girls was nearly

time they are fourteen years old. Many of those seen who were sixteen, seventeen and eighteen years of age were children in our special classes,—classes either for children of lower than normal intelligence, or for children showing definitely anti-social tendencies. This is not true of the nineteen, twenty and twenty-four year olds. These were students who never had had the opportunity of completing public school until the depression came along.

Our great number of cases occurred at 11 years, but the greatest number of "moderate" cases occurred at 13 years. However, if age-groups of more than fifty students are studied, namely those 16 years and under, then it is seen that the incidence of goitre amongst them rises from 3.4 per hundred students studied at 6 years, to 26.1 per hundred at 16

TABLE III.

AGE

Age	Total students		Slight No.	Moderate No.	Large No.	Total goitres		Incidence per hundred
	No.	Percentage				No.	Percentage	
6 years	315	5.4	10	1	0	11	1.5	3.4
7 "	516	8.8	29	1	0	30	4.1	5.2
8 "	641	11.0	31	6	0	37	5.1	5.7
9 "	638	10.9	44	15	0	59	8.2	9.2
10 "	657	11.3	54	22	0	76	10.5	11.5
11 "	709	12.2	88	31	0	119	16.5	16.7
12 "	733	12.6	83	35	0	118	16.4	16.0
13 "	659	11.3	74	40	0	114	15.8	17.2
14 "	546	9.4	56	32	1	89	12.4	16.3
15 "	233	4.0	22	20	1	43	6.0	18.4
16 "	71	1.2	8	7	0	15	2.0	26.1
17 "	23	0.39	2	1	0	3	0.4	13.0
18 "	4	0.06	1	1	0	2	0.2	50.0
19 "	1	0.01	1	0	0	1	0.1	100.0
20 "	1	0.01	1	0	0	1	0.1	100.0
24 "	1	0.01	0	0	0	0	0.0	0.0
Total	5,808		504	212	2	718		12.3

years. The increase is fairly sharp both at 9 years and 11 years, and then remains fairly constant to 15 years, when the incidence again rises.

Comparing the age-groups according to severity and age, we find the incidence per hundred students examined amongst the "slight" is 12.4, 11.3, 11.2, 10.2, 9.4 and 11.2 at 11, 12, 13, 14, 15 and 16 years, respectively. Amongst the "moderate" the incidence is 4.3, 4.7, 6.0, 5.8, 8.6 and 9.9 at 11, 12, 13, 14, 15 and 16 years, respectively. Thus the increase in incidence in the group as a whole after 12 years is due to the increase of moderates. We might summarize by saying that amongst our children goitre began to become prevalent at 9 years, and became more prevalent, and the goitre itself larger, as the children grew older. One further observation, that we regret we have not collected statistics on, was that goitres in the younger age-groups were nearly always amongst those of central European origin.

4. Distribution according to racial origin.—

The tremendous influence that racial origin has on the presence of goitre in our series is shown in Table IV. A great deal of time was spent in securing the origins of our students. It must be remembered that the vast majority of our students' parents, where they were of European origin, were born in this country or the United States, and that practically all of our students were born in either western Canada or western United States. In 8.9 per cent of our students we could not determine any other origin than Canada or United States. In these cases practically all of the grandparents were born on this continent. The Table is divided into two groups; the first, of more than 20 students, and the second of less than 20 students.

Races showing twice the average British incidence are the Austrian, Ukrainian, Polish, Russian, Dutch and German. We will present later a special study of these groups in which the diet and water supply is mentioned as being in

TABLE IV.
RACIAL ORIGIN

Race	Total students		Slight No.	Moderate No.	Large No.	Total goitres		Incidence per hundred
	No.	Percentage				No.	Percentage	
Austrian	23	0.3	4	3	1	8	1.1	34.7
Ukrainian	380	6.5	64	50	1	115	16.0	30.2
Polish	42	0.7	6	5	0	11	1.5	26.1
Russian	93	1.6	14	8	0	22	3.0	23.6
Dutch	67	1.1	7	6	0	13	1.8	19.4
German	264	4.5	36	14	0	50	6.9	18.9
French	91	1.5	8	6	0	14	1.9	15.3
Swedish	60	1.0	8	0	0	8	1.1	13.3
Greek	46	0.7	4	2	0	6	0.8	13.0
Jewish	93	1.6	11	1	0	12	1.6	12.9
American	87	1.4	7	3	0	10	1.4	11.5
English	2,394	41.2	189	55	0	244	33.9	10.1
Norwegian	90	1.3	7	2	0	9	1.2	10.0
Canadian	440	7.5	29	12	0	41	5.7	9.2
Irish	491	8.4	31	14	0	45	6.2	9.1
Scotch	979	16.8	66	24	0	90	12.5	9.1
Danish	30	0.5	2	0	0	2	0.2	6.6
SMALL GROUPS:								
Ruthenian	1	0.01	1	0	0	1	0.1	100.0
Belgian	1	0.01	1	0	0	1	0.1	100.0
Chinese	4	0.07	2	0	0	2	0.2	50.0
Negro	7	0.1	1	2	0	3	0.4	42.8
Doukhobor	4	0.07	1	0	0	1	0.1	25.0
Italian	5	0.08	0	1	0	1	0.1	20.0
Icelandic	5	0.08	1	0	0	1	0.1	20.0
Hungarian	14	0.2	0	1	0	1	0.1	7.1
Swiss	7	0.1	0	0	0	0	0.0	0.0
Syrian	2	0.03	0	0	0	0	0.0	0.0
Portuguese	2	0.03	0	0	0	0	0.0	0.0
Indian	1	0.01	0	0	0	0	0.0	0.0
Bohemian	2	0.03	0	0	0	0	0.0	0.0
Roumanian	2	0.03	0	0	0	0	0.0	0.0
Galician	2	0.03	0	0	0	0	0.0	0.0
Spanish	1	0.01	0	0	0	0	0.0	0.0
Armenian	1	0.01	0	0	0	0	0.0	0.0
Total	5,808	100.0	504	212	2	718	100.0	12.3

most instances the same as in the case of the average British family. While many families of foreign origin do prepare their meals differently from the average British family, still we cannot see how the method of preparation of these families could lessen the iodine content.

In addition to the higher incidence of goitre amongst these races we would like to call attention to the higher percentage of moderate cases amongst them than is true of the group as a whole. The percentage of moderates in the whole group was 29.5; the Austrians had 37.5 per cent, the Ukrainians 43.4, the Poles 45.5, the Russians 36.3, the Dutch 46.1, and the Germans 28.0. Further, it was our observation that goitres amongst the youngest age-groups, 6 to 9 years, nearly always occurred in these races.

5. *Distribution according to social condition.*—Our students were divided into four groups. As our nurses have been with us as long as sixteen years, and are constantly deciding upon applications for dental and medical aid, and, as Saskatoon is not too large for one not to know almost everyone, they have an extremely accurate conception of the social status of their children. Class "A" consists of the children of what we would in this city consider very well-to-do parents. Class "B" consists of the children of parents with adequate incomes—parents who should not have to hesitate in calling a doctor because of the expense. Class "C" consists of the children of parents whose incomes were less than fifty dollars per month with two children, with five dollars added for each additional child, *i.e.*, with ten children the income must be less than ninety dollars per months. Class "D" consists of children whose parents were "on relief".

As will be seen by reference to Table V, 10.2 per cent of our children were in Class "A", 26.7 per cent in Class "B", 36.0 per cent in Class "C", and 27.0 per cent in Class "D".

An explanation for the very large percentage of goitres in Class "D" was sought for. As will be seen by reference to Table V, there were ten times as many in Class "D" as in Class "A", the incidence being nearly four times as great in the former. Reference to Table VI, a, b, c,

TABLE VI.
RACE, SOCIAL CONDITION AND GOITRE

Class	Total students		Goitre	
	No.	Percentage	No.	Incidence
a — AUSTRIANS				
A	1	4.3	1	100.0
B	2	8.7	0	0.0
C	7	30.4	1	14.2
D	13	56.5	6	46.1
Total ..	23		8	34.7
b — UKRAINIANS				
A	5	1.3	0	0.0
B	17	4.4	4	23.5
C	139	36.5	36	25.8
D	219	57.6	75	34.4
Total ..	380		115	30.2
c — POLES				
A	0	0.0	0	0.0
B	1	2.3	0	0.0
C	21	50.0	6	28.5
D	20	47.6	5	25.0
Total ..	42		11	26.1
d — RUSSIANS				
A	3	3.2	0	0.0
B	14	15.0	3	21.4
C	44	47.3	12	27.2
D	32	34.4	7	21.9
Total ..	93		22	23.6
e — DUTCH				
A	2	3.0	0	0.0
B	9	13.4	2	22.2
C	19	28.3	3	15.7
D	37	55.2	8	21.6
Total ..	67		13	19.4
f — GERMAN				
A	9	3.4	0	0.0
B	48	18.1	5	10.4
C	88	33.3	13	14.7
D	119	45.0	32	26.8
Total ..	264		50	18.9

TABLE V.
SOCIAL CONDITION

Social Condition	Total students		Slight	Moderate	Large	Total goitres		Incidence
	No.	Percentage	No.	No.	No.	No.	Percentage	per hundred
A	595	10.2	24	7	0	31	4.3	5.2
B	1,552	26.7	86	30	0	116	16.0	7.0
C	2,092	36.0	197	63	1	261	36.3	12.4
D	1,569	27.0	197	112	1	310	41.7	19.7
Total	5,808		504	212	2	718		12.3

d, e and f, will, we believe, give the most satisfactory explanation for the greater incidence the lower one goes in the social scale.

Firstly, we notice the tremendous percentage of these races that are grouped in the lower social scale. For instance, 56.5 per cent of the Austrians, 57.6 per cent of the Ukrainians, 47.6 per cent of the Poles, 34.4 per cent of the Russians, 55.2 per cent of the Dutch, and 45 per cent of the Germans were "on relief". May we remind you that most of these parents have been in this country a quarter of a century.

Secondly, the incidence of goitre in Classes "A", "B" and "C" amongst the Poles, Russians and Dutch is higher than of Class "D", the other three races having a higher incidence in Class "D". Thirdly, we would like to draw attention to the fact that the incidence of goitre in these six races in all their classes is much higher than the average.

We feel that we may safely say that the reason for the higher incidence of goitre amongst our students as a whole, the lower they descend the social scale, is the higher percentage of races prone to goitre amongst them. For instance, these six races, consisting of 869 students, 14.9 per cent of the whole, had 219 goitres, or 30.5 per cent of all goitres. Further, 440 students' parents out of 869 included in these six races, or 50.6 per cent, were in Class "D", in comparison with 27.0 per cent of the average; 318, or 36.7 per cent, were in Class "C", compared with the average of 36.0 per cent in the whole group; 91, or 10.4 per cent, were in Class "B", compared with 26.7 per cent; and 20, or 2.3 per cent, were in Class "A", compared with 10.2 per cent. Thus it is seen that there are nearly twice as many of these races on relief as in the whole group, and that a much smaller percentage are in Classes "A" and "B", whilst the per-

centage of these races in Class "C" is about the same as in the whole group.

We mentioned that the diet of at least half of those races prone to goitre was the same as the average British family. In Saskatoon the families "on relief" draw their groceries and meat from one depot, where they are supplied according to the number and ages of their family. This diet schedule was originally made up by the dietitians of the three western universities. Thus all families "on relief" are receiving the same iodine content per person. All of our city obtain their water supply from one source.

SUMMARY

1. Five thousand eight hundred and eight school children in Saskatoon were examined for goitre, and 718 cases found.
2. Sixty-three per cent of our cases were found in girls. The incidence in girls was nearly double that in boys, and the goitres tended to be larger.
3. Goitre began to be prevalent at 9 years. The incidence rose at 11 and 15 years, owing to an increase of the moderate-sized goitres.
4. Racial origin seemed to be the factor of greatest importance in the incidence of goitre. This was not due to the diet or water supply, because at least half of the races in whom goitre was most frequent were on the same diet as those of British origin.
5. The higher incidence of goitre, the lower one went in the social scale, seemed to be due to the presence of a greater number of those races prone to goitre in the lower social classes.
6. The larger percentage of Austrians, Ukrainians, Poles, Russians, Dutch, and Germans "on relief" than the average was discovered in the course of the survey.

LUNG ABSCESS AND PULMONARY CANCER.—O. Ivanisovich, R. C. Ferrarri, and another sound a note of alarm regarding the frequency with which cancer is overlooked when pulmonary abscess is diagnosed. Of 62,670 patients in the Institute of Clinical Surgery, Buenos Aires, only thirty-two had cancer of the lung, but of these thirty-two, fifteen had been sent in with abscess of the lung. In the cases first examined the error was not discovered until the necropsy, despite operation and re-operation. If mistakes are to be

avoided, the help of the microscope, of radiology, and of bronchoscopy is, it is stated, indispensable. Bronchoscopy is the most accurate diagnostic weapon, since the cancer originates chiefly at the bifurcation of the larger bronchi as a simple infiltration devoid of vegetations. Every non-tuberculous subject with cough, expectoration, and hæmoptysis should be examined bronchoscopically. Exploratory thoracotomy after artificial pneumothorax is a useful supplement.—*Semana Médica*, Nov. 15, 1934, p. 1477.

ON THE USE OF PURGATIVES

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THERE is probably no more common cause of minor ill health than constipation, and no field in which the preventive skill of the physician could be more wisely and beneficially exercised. Yet what does the medical profession do about it?

While Sir Arthur Keith might point out that constipation is in part due to our adoption of the erect posture, it is more certainly true that it is due to the restraints of civilization. The failure to react promptly to the reflex set up by the filling of the rectal ampulla is doubtless the commonest cause of constipation. In the rectum are located special sense organs which react to stretching and pressure by setting up a peristaltic reflex. But unlike other parts of the gut this terminal portion reacts not only locally but over a long reflex arc on higher parts of the large gut. If the urge is repressed voluntarily, then the sense organs gradually become adapted to the pressure and no longer give off the sensory impulses which are essential. Gradually, too, the sense organs become less responsive, just as they do to pressure elsewhere. Very soon one does not feel one's eye glasses or spectacles. The mechanism of defæcation becomes faulty, drying of the large gut content becomes abnormal, propagation of the peristaltic wave less, and chronic constipation results.

But has a great campaign of instruction to teach every member of all families ever been instituted by the physician? Does the physician ask if the children go to stool at a regular hour, at the best time just after breakfast? And do the school physicians and nurses teach and preach daily habits? The rush to school or work just after breakfast is doubtless a common cause. According to Hurst, the lower few inches of the ileum are usually still filled with contents before breakfast, but filling the stomach sets up a long reflex which leads to this content being passed into the colon and this increases its activity with some forward

movement, leading to a filling or greater filling of the rectal ampulla and the defæcation reflex.

Nor is the physician more concerned in permanently relieving constipation among his patients when he discovers it. He perhaps knows that his task is a difficult one, but, throwing aside the interests of his bank balance and of the patient, he recommends a purgative pill. He plays directly into the hands of the proprietary houses, which batten on the constipated population. Purgatives are one of their great stocks in trade. If we prevented constipation, as to a large extent the profession could do, and instituted vigorous, carefully thought-out, treatment, our great rivals in the field of treatment would receive a severe blow. But instead we are cozened into trying X's bile pills and Y's new, wonderful combination of discredited and forgotten drugs. There is no reason why Gamboge, Dandelion (*Taraxacum*), Euonymus (*Wahoo*), Chicanthus, Cascarella, Leptandrin, should ever be employed in a purgative pill; and why should purgative pills contain Pancreatin, Quinine or Ipecacuanha? Yet those sold to physicians do. We allow the advertisements and our lack of knowledge to persuade us that 1/60 gr. of Strychnine is a valuable addition to a purgative pill. For this there is but the slightest experimental proof. Yet one Canadian firm lists, and doubtless sells, no less than eleven purgative pills or tablets containing this constituent. These are often coated with chocolate, and the profession which allows their sale in the drug store is thus indirectly responsible for the 28 deaths recently reported by Ross and Brown in this *Journal* (1935, 32: 282). Potential poisons and harmful drugs should only be dispensed on a physician's recommendation. Salts should be adequate as an emergency measure in the household.

If we look briefly at the pharmacopœial purgatives, we find the salines, Magnesium Sulphate, bitter and unpleasant; Sodium Sulphate, more bitter perhaps, but less unpleasant.

Both can be partly covered with Liquorice or the Compound Syrup of Sassafras. The Phosphates and Tartrates are more palatable, and the latter in effervescent form not too unpleasant. They act by retaining water in the small gut, thus increasing the bulk in the large one and hence increasing its activity. They should be well diluted if rapid action is required. They are not harmful to the gut.

Castor Oil also acts in the small intestine. Its active principle, ricinoleic acid, is developed by the splitting of the oil by the fat-ferments (lipase), and as it becomes neutralized it is less effective. The ricinoleic acid irritates the small gut, increasing its activity and consequently the bulk carried to the colon. This responds largely to the increased bulk alone, unless a large dose of oil has been given.

The anthracene group, Aloes, Rhubarb, Cascara and Senna, has little action in the small gut, but increases the peristaltic activity of the large one, and apparently decreases the normal anti-peristaltic waves in the cæcum and ascending colon, thus leading to decreased water absorption and more bulk. Cascara causes less griping, and hence its popularity. Rhubarb is excellent for occasional use, but is said to lead to subsequent depression of activity. The old Senna mixtures and confections have fallen, perhaps unduly, out of favour. Aloes is most apt to cause griping. There seems some reason to believe that in some persons, at all events, the incorporation of Extract of Belladonna will prevent this symptom, because atropine, even in small doses, decreases intestinal tonus. None of them appear to produce much eventual damage. For Cascara alone the claim is made that it does not require to be taken in increasing doses. The tonus of the large gut is usually good, and Strychnine will not improve it.

The drastic group of Jalap, Colocynth and Podophyllin, once so popular, is now little used, save in combination with members of the anthracene group. Their action is distinctly irritant to the small gut, producing in adequate dosage increased peristaltic activity and a marked secretion. Their active principles apparently undergo a chemical change which leads to their irritation of the large gut being absent or less marked. Phenolphthalein seems to act like a weaker member of this group, with a more lasting effect on the large gut.

Then we have those popular additions to our armamentarium, Liquid Paraffin and Agar Agar. The action of the latter is easily discerned. It is unabsorbable and retains water and thus increases the bulk in the large intestine. Liquid Paraffin is also unabsorbable. A great deal has been made of its lubricant action, but any physician who has ever felt the slipperiness of the intestinal mucus will scoff at this point. Intestinal mucus is, save the synovial fluid, one of the most perfect lubricants that we know. Paraffin acts doubtless by forming a film about the solid particles of the eventual fæces, decreasing the absorption of water from them and thus increasing the bulk and keeping it soft. The brilliancy of the deviser of proprietaries has led to these two substances being combined. Some of the paraffin is used to coat the agar, thus preventing its solution, or the agar coats the paraffin and makes less of it available to coat something else. It is true that leaking of paraffin with flatus is less apt to occur, because less paraffin is available to leak. But to obtain the necessary certainty of action, it is a common trick to incorporate enough phenolphthalein to give a laxative action, even if the agar and paraffin were not given. Evidence of the value of the laxative addition in increasing effectiveness, and hence in increasing sales, may be seen in the latest nostrum of this class, Agar and Paraffin, with Cascara.

Another grand fad is "roughage". This certainly increases unabsorbable bulk, and mechanical irritation may, though it probably does not, increase the activity of the small gut; but its vogue is greatly overdone. The best x-ray studies of its effect indicate that a diet containing much roughage does not lead to the fæces being passed much earlier than if the roughage were less in amount.

A well-developed case of constipation requires careful study; developmental or physiological defects like megacolon must not be overlooked; habits and mode of life, and diet must be looked into. Treatment must be directed to reforming the defæcation habit, to bringing back the sensitivity of the rectum, to redevelopment of the defæcation reflex. This requires time and experimenting. An early morning saline, with plenty of water so that the fluid reaches the large gut by after breakfast, at first. Prompt

response to the first, and if necessary, the second, desire. Prunes, figs and roughage if you like, with, if need be, agar or paraffin at night, the second stage. Diligent cultivation of the reflex, even at personal inconvenience. These are, in brief, the steps to cure. Avoid if possible the after-dinner pill; encourage the patient to do without one. See that the patient considers himself a patient till he can do without the aid of drugs, save the occasional saline. Do not turn him over to the proprietary quacks; he should be your patient, not the prey of the advertising agent. If your patient needs a laxative, prescribe a pharmacopœial pill or mixture. Use an official preparation tested by time and experience. The proprietary house cannot buy the experience and the wisdom that has led to their production.

The manufacturer deluges the prescribing physician with a wide choice of purgative pills; one Canadian house lists 27 varieties, another 16. Surely no physician, for the treatment of his patients, should require such a variety. Therapeutics is the art of prescribing the right treatment for each case, but there are surely not 27 different varieties of cases of constipation, and no physician can possibly learn to use 27 different purgative pills accurately. The advantage of such a variety lies in sales talk and the whims of physicians. To gain skill, the physician must learn to use a few drugs accurately, noting their effect in different cases, till he can use them wisely and make a shrewd guess as to exactly what effect they will produce in any case.

SPONTANEOUS SUBARACHNOID HÆMORRHAGE SIMULATING DIABETIC COMA, WITH A REPORT OF TWO CASES*

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SPONTANEOUS subarachnoid hæmorrhage, originally described by Wilks¹ in 1859, is now frequently recognized. It is not likely that the condition is increasing in frequency, but it is coming to be identified as a clinical entity more often, due to the repeated references to it in the literature. Ohler and Hurwitz² state that spontaneous subarachnoid hæmorrhage constitutes one-fifteenth of all cerebro-vascular accidents, and has the same incidence as subacute bacterial endocarditis.

It is not the purpose of this communication to discuss the condition in detail, but merely to report two cases which recently came under our attention, which were admitted to hospital with a provisional diagnosis of diabetic coma.

CASE 1

W.N., male, 49, was admitted to the University Hospital in a semi-conscious state on May 2, 1931. Dr. Goldberg, who referred him, had seen the patient several hours previously, had found him unconscious; and the urine showed glucose three plus.

On admission the patient was semi-comatose. Intra-ocular tension was normal. The urine showed glucose and ketone bodies; no albumin, but a few red and white blood cells. Blood sugar, 0.144 per cent, and CO₂ com-

binig power, 53 volumes per cent; cholesterol, 245 mgm. per cent.

Physical examination showed retraction of the head, respirations very deep and 20 to the minute. The patient was restless. The pupils were equal, normal in size, and reacted to light. Passive movement of the head caused an expression of pain. The pulse was 65, full and regular; blood pressure, 210/95. The heart and lungs were normal. Fundi normal. Slight twitching of the left arm. The reflexes were all slightly exaggerated. No abnormal responses. Hæmoglobin, 112 per cent; red blood cells, 4,930,000; white blood cells, 17,000. Differential count: polymorphonuclears 90, lymphocytes 8, endothelial 2 per cent. Lumbar puncture showed increased pressure. The fluid was bloody, and, on settling, the supernatant liquid was straw-coloured. The Wassermann test was negative.

The following history was obtained from the patient's wife. Thirty hours before admission, after a hard day's work in the field, he was seized with a severe headache all over the frontal region. This moved to the back of the head. He said "it felt as if the whole front of his head was going to burst, or his eyes were going to pop out." This feeling came on about two hours after the onset of the headache. He vomited for about two hours. A doctor was summoned and bled the patient, who was not conscious of what was going on at this time. Following this, he talked a great deal, and then became stuporous, and had jerking of both arms, but more vigorously on the left side. His condition remained so until his admission, when he complained of severe pain on the top of the head and back of the neck. There was little change for two days. Then he developed some increase of restlessness and tried to get up. The headache became less severe and the neck less painful. Two days later the temperature was 101.4°; pulse, 80; blood pressure, 210/95. The patient was rational, but very restless. He still complained of pain at nape of

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neck. The left optic disc was blurred; no hæmorrhages visible. The abdominal reflexes were absent; the others, present. After breakfast, two days later, he said he felt well, but half an hour subsequently was found unconscious with stertorous breathing of Cheyne-Stokes type. Pulse 60; all reflexes absent; pupils, pinpoint. In an hour or two breathing became more regular and consciousness returned.

Two days later the patient was restless. The abdominal reflexes present. Slight ankle clonus present on the right side. All reflexes were absent in the left lower extremity. Lumbar puncture: pressure 30 mm. with clear fluid. Two weeks later the patient was discharged.

Two years after discharge he showed marked irritability of temper and erotism, and was mentally below previous level. He is still unable to do the same work that he used to.

CASE 2

Mrs. F.B., aged 40, was admitted to the Edmonton General Hospital at midnight, January 7, 1934, in a comatose condition.

On admission a complete clinical history was not available. On examination, she was found to be deeply comatose with deep breathing which was not stertorous. The skin and tongue were dry. Examination of the urine showed an acid reaction; specific gravity, 1.028; albumin, two plus; sugar, three plus; acetone, three plus; a few granular casts and pus cells. A blood count showed red cells, 4,600,000; leucocytes, 12,500; and hæmoglobin, 95 per cent. A provisional diagnosis of diabetic coma was made, and she was given 60 units of insulin subcutaneously and 500 c.c. of 5 per cent glucose in saline intravenously. At 1.10 a.m. a further 50-unit dose of insulin was given.

At 1.30 a.m. she was seen by one of us. By this time the history of the onset was obtainable from the patient's husband. He stated that she was in her usual good health on January 6th, and awakened on the following morning at 8 o'clock with a severe headache. She dressed and carried on her household duties for an hour. At 9 a.m. the headache became more severe. While drinking a glass of water she fell to the floor, stating that she felt as if something were pressing on the top of her head. She lost consciousness shortly afterwards and remained in a stuporous condition, with occasional intervals when she could be roused and was able to answer questions. She vomited twice during the day. She was seen by her family physician, Dr. Miller, of Westlock, in the evening, and was brought into hospital.

Enquiry into the past history disclosed few positive findings of interest. She had complained of an occasional headache, but on the whole had enjoyed good health. She had given birth to nine healthy children. There had been no history of loss of weight; there was increased thirst recently, but no increased appetite nor polyuria.

The history of unconsciousness of sudden onset without any definite antecedent symptoms suggesting diabetes mellitus led to a reconsideration of the admission diagnosis.

Examination.—When seen at 1.30 a.m. she was in deep coma; pulse, 60; respirations, 24; temperature, 99°. The breathing was deep, but not of the Kussmaul type. The skin and tongue were dry. The eyeballs were not abnormally soft; the pupils were equal and reacted to light; there was some engorgement of the retinal veins. Otherwise the cranial nerves were normal. There was slight rigidity on flexing the neck. Kernig's sign was negative. The abdominal reflexes were absent. The deep reflexes in both upper and lower extremities could not be elicited. There was a positive Babinski response on the left side. All the limbs were hypotonic. Examination of the heart, lungs and abdomen showed no abnormal findings. The vessels were not thickened. The blood pressure was 164/90. The blood Wassermann test was negative.

The history of the onset and the clinical findings suggested spontaneous subarachnoid hæmorrhage, and a spinal puncture was done. The cerebrospinal fluid pressure was 13 mm. of mercury, and the fluid was bloody. Meantime the patient developed signs of hypoglycæmia, showed sweating, and an increase of pulse rate to 92. The blood sugar, which on admission was 0.093 mg. per 100 c.c. was reduced to 0.036 mg. Following the puncture the patient roused from her comatose state and was able to swallow orange juice and sugar sufficiently to overcome the hypoglycæmic reaction. During the next 24 hours she remained drowsy, but responded to questions. She complained bitterly of frontal and vertical headache. The urine showed a trace of glucose and acetone two plus.

On January 9th, the mental condition remained about the same. She developed a ptosis of the left upper lid, a paralysis of the left external rectus muscle, and was unable to accommodate for near vision. The knee and ankle jerks were present, but subnormal. The urine showed a faintly positive Rothera test for acetone; glucose was absent; albumin plus.

On January 10th she was more drowsy, and the headache persisted with increasing severity. Dr. M. R. Levey, who saw her in consultation, reported blurring of the nasal margins of both discs, with marked engorgement of the retinal veins. The spinal puncture was repeated at 6.00 p.m. The fluid pressure was under 20 mm. of mercury, and was straw-coloured, with a few red blood cells. The urine showed no glucose or acetone; albumin was still present. Her subjective condition improved for 24 hours following the puncture, the headache was less severe, and her mental state was clearer. Dr. H. H. Hepburn, who saw her on January 11th, confirmed the clinical findings as previously described and concurred in the diagnosis.

It was felt at this time that the prognosis was reasonably good, considering the fact that four days had elapsed since the onset of hæmorrhage, and that the symptoms of increased intracranial pressure were so definitely relieved by spinal puncture. However, at 7.00 p.m. of the same day the patient lapsed into unconsciousness. At 10.45 cyanosis developed and the breathing became stertorous. Death occurred at 11.15 p.m.

An autopsy was carried out by Dr. J. W. MacGregor on January 12th. Exposure of the brain showed an extensive subarachnoid hæmorrhage over the entire right hemisphere with evidence of clotting in the region of the Sylvian fissure. The right temporo-parietal area was softened. There was no evidence of arteriosclerotic change in the vessels of the circle of Willis. On further examination a branch of the right middle cerebral artery in the region of the Sylvian fissure was found to be surrounded by blood clots. Closer examination showed a rupture of the vessel at the point of bifurcation. The torn end was slightly dilated, and had the appearance of a small aneurysm. This was apparently the source of the hæmorrhage, and by interrupting the blood supply to the cortex produced cerebral infarction. Section of the right temporo-parietal lobe showed the brain substance to be very soft and of almost fluid consistency. The rest of the brain was negative.

COMMENT

The presence of glucose and acetone bodies in the urine of a comatose patient in whom a complete history is not available justifiably leads to a tentative diagnosis of diabetes mellitus. The association of glycosuria with brain injury dates back to the monumental work of Claude Bernard. The presence of acetone bodies however under such conditions has not been a common finding. Lamb,³ in a

careful laboratory study of 7 cases of spontaneous subarachnoid hæmorrhage, states that there is usually a trace of albumin, but no sugar or acetone bodies are present. Courts,⁴ reports glycosuria in one patient with this condition. No mention is made however of acetonuria.

The history of sudden onset in subarachnoid hæmorrhage, associated in almost every case with severe headache and neck rigidity, facilitates the diagnosis. Physical signs of organic disease in the nervous system may or may not be present. When a history of onset is not available, as in patients who are found in coma, one should not too readily accept the finding of glycosuria and acetonuria as evidence of diabetic coma. Under such circumstances a spinal puncture is necessary. The finding of bloody fluid which does not clot, with a yellowish colour when the cells settle out, will establish the diagnosis.

SUMMARY

Two cases of spontaneous subarachnoid hæmorrhage showing marked glycosuria and acetonuria are reported. Both patients were admitted to hospital with a tentative diagnosis of diabetic coma.

The value of obtaining, if possible, the history of onset and carrying out a spinal puncture has been pointed out.

Recovery occurred in one case. The diagnosis in the second case was verified by the finding of an aneurysm of the middle cerebral artery at autopsy.

Our thanks are due to Dr. E. B. Trowbridge, of the Edmonton General Hospital Staff, for valuable assistance in investigating Case 2.

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ACTINOMYCOSIS, AN ANALYSIS OF TWELVE CASES

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THE subject of actinomycosis is introduced because it has not been given as much consideration in practice as its importance demands. It is still controversial as to whether the disease is established through extrinsic or intrinsic agencies. In other words it appears to be a matter of doubt as to whether, in broad terms, the infection may occur through chewing infected straws or using sterile toothpicks. In more precise terms, the controversy hinges upon the conveyance and ingestion of the organism by food, on the one hand, or, on the other hand, upon the traumatization of tissues in which the organism already exists in a non-pathological state. At any rate it would seem that the chief mode of entrance is by the tissues of the oral cavity,—gums, carious teeth, tongue, tonsillar crypts, and from these points of entrance any tissue or organ of the body may be invaded.

Clinically, there are three main forms of the disease: (1) the cervico-facial type; (2) the

respiratory type; (3) the abdominal type. The diagnosis is based upon, (1) a recognition of the clinical syndrome, (2) the discovery of the characteristic "sulphur granules" in the tissues or in the exudate, and (3) the microscopic demonstration of *Actinomyces bovis*.

Owing to its tendency to follow an insidious and chronic course, actinomycosis is very likely to be mistaken for other diseases, especially tuberculosis. In the mouth it may suggest the oral sepsis of diseased teeth, and in the throat it may resemble infected tonsils. Syphilis and malignancy also share in the confusion, especially in relation to the tongue. The respiratory form is frequently regarded as tuberculosis; the abdominal form, as tuberculosis or cancer. Chronic indurated lesions in the neck, with running sinuses, are likely to be regarded as tuberculous adenitis. The head and neck type is the least dangerous and offers a prognosis of 75 per cent recovery. The abdominal type is more serious, with a mortality of 30 to 50 per cent. The respiratory type

offers the most serious prognosis, with death in the great majority of cases within a year. Metastatic extension to distant tissues may occur, especially metastatic abscess of the brain in the pulmonary form.

With a view to a practical view-point of the disease, an analysis of the cases treated during the past ten years in the University of Alberta Hospital was attempted. From 1923 to the present date, 12 proven cases have been reviewed.

Age.—The age of incidence has been found to vary from the eighth to the sixty-fifth year: 1st decade, 1; 2nd decade, 2; 3rd decade, 4; 4th decade, 3; 5th decade, 0; 6th decade, 1; 7th decade, 1. From this it will be seen that the greatest incidence was between the ages of 20 and 40.

The sex.—Males predominated overwhelmingly, in the ratio of twelve males to one female.

The race.—There was great diversity in this respect: Canadians, 4; English, 2; Polish, 2; French-Canadian, 1; Norwegian, 1; Scotch, 1; Russian, 1.

Occupation.—The incidence in this particular was almost exclusively agricultural; 10 farmers, 1 farm and railway labourer, 1 child from a farm.

Duration.—The duration of the disease before admission to hospital and before diagnosis was specifically established varied from three weeks to two years, with an average of four months.

Symptoms.—The early symptoms were fairly uniform, the most common being: (a) difficulty in opening the mouth (or trismus); (b) difficulty in swallowing; (c) a painful, tender lump on the side of the neck or jaw. One case began as an abscess in the throat, one with a lump in the upper right quadrant of the abdomen, one simulated a ruptured appendix, one had influenzal symptoms and a pain in the right side of the chest at the site of a broken rib sustained seven weeks previously.

Blood findings.—In the head and neck cases there was little if any anæmia, but there was slight leucocytosis. In the abdominal and respiratory cases there was marked secondary anæmia and a pronounced leucocytosis, ranging from 12,000 to 38,000.

Urine.—The urine was practically negative in all the cases.

Clinical types.—Clinically the types that were

presented were: cervico-facial, 10; respiratory, 1; abdominal, 2.

Incidentally, one abdominal case had a three plus Wassermann reaction. The other abdominal case began with subacute pain and tenderness in the appendix region one month prior to admission, and on admission laparotomy was done, the operative diagnosis being pelvic abscess, and the *Actinomyces* was not found in the pus or tissue. The patient was discharged and later readmitted with chronic sinuses in the abdomen and positive findings.

In the respiratory case the patient developed a metastatic abscess in the cortex of the brain and showed Jacksonian episodes with hemiplegia a few weeks prior to death. (X-ray of the skull was negative.)

Clinical course.—The cervico-facial, or head and neck, cases made a sufficiently good recovery to be discharged from hospital and return to their own devices. The respiratory case and the two abdominal cases terminated fatally and autopsies were performed. The death picture was that of profound toxæmia and cardio-respiratory failure.

Most of the patients who left the hospital had some remnant of a discharging sinus.

X-ray diagnosis was attempted in 4 cases. In one there was sufficient roughening and honey-combining of the jaw to suggest actinomycosis. In another case the jaw condition was diagnosed as osteomyelitis. In the other two there were no radiological changes.

Treatment.—The treatment followed was surgical intervention by incision and drainage of the abscesses which had formed in all of the 12 patients. Resection of a rib was undertaken in one abdominal case for a subdiaphragmatic abscess, and in the respiratory case for an empyæma. X-ray treatment was supplemented in 3 cases with apparently good effect.

Iodine therapy was utilized in all the cases in the form of potassium iodide in some, and the tincture of iodine or Lugol's solution of iodine in the others. The dosage of potassium iodide was initially 5 or 10 grains, three times a day, increasing gradually to as high as gr. 45, three times a day, in one case. In a case with the higher dosage, iodism resulted but subsided readily with a scaling down of the amount administered. The tincture was used in dosage of 5 to 30 minims three times a day, in graduating amount.

CONCLUSIONS

The conclusions drawn from the series are as follows:—

1. The disease is likely to be treated by household devices in the early stages before a physician is consulted.

2. The dentist may be the first therapist whose services are sought, and extractions may be undertaken without satisfactory results.

3. The physician who first sees the case may be inclined to temporize, through the chronicity of the disease, and frequently because he harbours the suspicion of a tuberculous infection. Diagnosis by demonstration of the organism is therefore likely to be deferred until the disease has a firm foothold.

4. The later diagnosis is deferred, the more protracted and rebellious is the disease.

5. The prognosis of the different types as stated in the texts is amply confirmed by the series.

Mr. Ralph Bates,¹ of London, has recently reported an account of 29 cases seen in the London Hospital over a period of five and one-half years. His statistical findings are essentially the same, and his important conclusions may be summarized thus:

1. In cervico-facial cases, before the formation of pus, *trismus* is the most important sign.

2. Early diagnosis by bacteriological examination of pus in all cases of alveolar abscess, and early treatment with iodides will prevent the terrible scarring and repeated relapses of the disease.

3. If microscopic methods are not available, a tentative diagnosis may be made by tilting a test-tube containing the pus when the "sulphur granules" may be seen as "greenish-grey" specks adhering to the glass. A hand lens may aid in this inspection.

4. In both superficial and deep types, adequate drainage of abscesses, with increase in oxygen tension of the tissues, gives good results by embarrassing the existence of the anerobic organism.

5. The prognosis depends upon the anatomical site of the lesion and early recognition of the disease.

The object of the present analysis is to impress upon the profession in the agricultural provinces the desirability of keeping actinomycosis in mind as a possible cause of chronic inflammatory or suppurative lesions in the head and neck, the thorax, and the abdomen. Upon a shrewd suspicion may depend so much.

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NEMBUTAL IN SEA-SICKNESS

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SINCE time immemorial the sea-sick passenger has been a subject of jest and ridicule. The fact that great relief can be given to many of these sufferers by an understanding of the underlying basis of their condition has not been sufficiently recognized. Maitland¹ has recently drawn attention to the importance of a study of the individual in this disorder, and has pointed out that beneficial results may follow sedative prophylaxis in the apprehensive type. Applying the classification of vagal and sympathetic types to sea-sickness, he believes the majority of cases belong to the sympathetic group. Many of these present the symptoms of vomiting at the beginning of a voyage, even before the ship encounters rough weather. In

fact, the odour from the galley or engine-room while the vessel is still in port may be sufficient to produce nausea and vomiting. Appropriate sedative medication helps to allay the apprehension of these subjects, and also assists in reducing the irritability of the vomiting centre.

THEORY OF VOMITING

It is generally accepted that the act of vomiting is controlled by a group of nerve cells situated near the sensory nucleus of the vagus nerve. This centre is continually receiving impressions from various parts of the body which ordinarily do not arouse a response. At sea, owing to the oscillation of the ship and vibration from the engines, many unusual and

noxious stimuli are received by the higher centres. In the average person this stimulation is the chief factor in the causation of seasickness. Immunity is established and the passenger is said to have found his "sea legs" when the threshold values of these stimuli are raised and they no longer arouse a response. People of extreme susceptibility who vomit at the least excuse usually present the emotional and physiological reactions associated with the so-called "sympathetic type". It seems reasonable to assume that the threshold for response to stimuli in the vomiting centre is lowered in these subjects.

SEDATIVE MEDICATION

During a series of North Atlantic crossings an attempt was made to assess the value of barbituric sedatives in the prophylaxis and treatment of sea-sickness. The investigation was limited to those cases which gave a history of previous attacks. Susceptible passengers were requested to visit the ship's surgeon as soon as possible after embarking. Their personal history was investigated, and notes were made of the type and frequency of former attacks. A certain uniformity was apparent in the character of those attacks, and the cases were classified broadly into a headache group and a vomiting group. In the headache group intense headache alone, or headache and dizziness, with or without epigastric discomfort invariably occurred, ordinary weather conditions prevailing. Vomiting was not a characteristic of this group. In the majority of cases, however, vomiting, with or without preceding nausea, appeared early, and persisted throughout the attack.

The sedative employed was pento-barbital sodium (Nembutal). A capsule containing 1½ gr. was administered on embarking, followed by a ½ gr. capsule taken three times a day thirty minutes before meals. No special dietary instructions were given, and the passengers were requested to take an occasional aperient, but no other drugs. If nausea was present a draught containing sodium bicarbonate was given with the sedative.

RESULTS

Seventy passengers were studied from the standpoint of prophylaxis. Of these 15 gave a previous history of headache, unassociated with vomiting. Although sedative administration

did not appear to relieve the headache in this group, these patients reported that they felt more comfortable during the voyage than they had on previous occasions. More favourable results were obtained among the "vomiting group". The term "cure" was considered to be too sweeping in an investigation of this nature, and the classification adopted was: (1) marked improvement; (2) improved; (3) unchanged; (4) worse.

In the category of "marked improvement" were placed those patients who were invariably sick during previous crossings, and who, under treatment, were able to eat all meals without nausea or vomiting appearing at any time. Under "improved" were included passengers who felt definitely better than on former voyages, nausea and vomiting being of rare occurrence, and not of sufficient intensity to necessitate absence from meals or confinement to bed.

Analysis showed that out of a total of 55 cases, 88 per cent were found to fall into the "improved" or "marked improvement" categories, and 12 per cent were unchanged. No passengers were made "worse" by the treatment, and 9 were classified under "marked improvement". The average period of observation was seven days. The best results were obtained during the eastbound passage, i.e., from Montreal, where two and one-half days were spent coming down the calm waters of the St. Lawrence River.

In 30 cases, not included in the above series, where vomiting had been present for some time, successful results followed rectal administration of the sedative. A two-grain suppository, combined with 1/200 gr. of hyoscine hydrobromide placed on the tongue, was sufficient to check vomiting in these passengers.

CONCLUSIONS

Generally favourable results are to be expected from the use of "Nembutal" in the prophylaxis and treatment of vomiting in seasickness. This line of treatment does not relieve headache if present. In order to reduce the general reactivity of the apprehensive patient, and the irritability of the vomiting centre, sedative medication should be commenced at least twenty-four hours before sailing.

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Case Reports

PAPILLOEDEMA IN PERNICIOUS ANÆMIA*

BY EDWARD S. MILLS, M.D.,
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Mrs. B.B., aged 40, first came under observation on May 22, 1934, when she was admitted to the ward from the out-patient department with a tentative diagnosis of pernicious anæmia. Her complaints were: weakness of the knees, a yellowish colour to the skin, and a hissing sound in the right ear.

Family history.—Mother, one brother, and one sister alive and well. Father died at 65 from heart disease. One daughter, aged 19, is alive and well.

Personal history.—The patient had never been in the tropics. She works as a cleaner in a school. She had always been healthy.

Present illness.—The patient thought that her illness began about a month before admission, when she suddenly experienced a buzzing noise in the right ear which had been constantly present since that time. About a week after this she noticed a purulent discharge from the right ear. About the same time she began to experience a sensation of tightness about both knees which was aggravated by bending over or climbing stairs. Although she thought she had always been pale, a yellowish tinge to the skin was not noticed until three days before admission. At no time had she had headache, vertigo, earache, dyspnoea, or palpitation on exertion. Since the onset of her illness she had been nervous, irritable and upset by trifles. She had never had any gastro-intestinal symptoms or glossitis. Loss of weight, 18 pounds. She consulted Dr. A. Trefrey who recognized a severe degree of anæmia and referred her to the hospital for investigation.

Physical examination.—Temperature 98.3 F.; pulse, 96; respirations, 24. The striking features were her colour and her personality. Both skin and mucous membranes were decidedly pale. The sclerotics and skin were unmistakably of a lemon yellow tint. During the

examination she talked incessantly about herself and her physical condition. Though definitely euphoric, she was well oriented and quite rational. A small perforation was noted in the anterior inferior quadrant of the right tympanic membrane, through which purulent foul-smelling fluid exuded. The tongue was clean, protruded straight, and showed no atrophy or ulceration. Small flame-shaped hæmorrhages were visible in both retinæ. The left disc appeared to be hazy in outline, though the right was normal. The pupils reacted normally. Examination of the throat, neck, lungs, heart and abdomen revealed no abnormalities. The blood pressure was, systolic, 162, diastolic, 80. Examination of the nervous system showed normal intelligence. The cranial nerves were intact. Coordination, sense of pain, heat, cold, position and touch were normal; vibration sense was normal in the right side, though definitely diminished over the left lower extremity. Two-point discrimination seemed somewhat impaired on both sides, though her reflexes were inconsistent. The abdominal reflexes were absent, though all other reflexes were present and equal on the two sides.

Laboratory data.—(1) The urine was normal, no bile; (2) blood—red cells, 1,700,000; leucocytes, 6,950; hæmoglobin, 40 per cent (Helige); platelets, 155,000; reticulocytes, 5.5 per cent. Red cell diameter, 8.2 microns. Van den Bergh, 4.0 units. Bleeding time, coagulation time and fragility of red cells, normal. Differential count: polymorphonuclear neutrophils, 67 per cent; lymphocytes, 17 per cent; eosinophiles, 1 per cent, myelocytes, 1 per cent; degenerated forms, 14 per cent. Smears showed a definite macrocytosis, with moderate variation in size and shape of the erythrocytes. One normoblast was seen. (3) Gastric test meal, Ewald type; achlorhydria in all fractions even after histamine, when the greatest total acidity was 10. (4) Blood-urea nitrogen, creatinine, and sugar were normal. The Wassermann test was negative.

Subsequent course.—May 24, 1934.—A paracentesis of the right tympanum was done. No pus obtained. Mastoid normal. May 25th.—Oph-

* From the Department of Medicine, Montreal General Hospital.

thamologist reported bilateral papillœdema, with numerous hæmorrhages above and below both discs. May 28.—The patient was noisy and restless, disturbing the ward and attempting to get out of bed. At times she imagined that the left leg was paralyzed, though she moved it normally. She talked to herself when not in outbursts of weeping.

May 30th.—The neurological consultant reported the patient as noisy, very talkative, and hilarious, though oriented. No pyramidal signs or ataxia were present. An anterior cerebral lesion was suspected. Intramuscular liver extract therapy begun.

Lumbar puncture revealed an initial pressure of 220 mm. of water, with normal oscillations with breathing, coughing and jugular compression. Fluid clear; cells, 3; Pandy test negative; total protein, 0.060 mgm. per cent. The cerebrospinal Wassermann test and colloidal gold curve were negative. June 5th.—Hypomaniac state continued. Bilateral papillœdema of two to three dioptries, persisted. There was now retention of urine, requiring daily catheterization. A horizontal nystagmus appeared.

June 8th.—The neurologist reported diminished corneal reflexes, ataxia in finger tests, nystagmus and an Oppenheim reaction on the right side. A right cerebello-pontine angle lesion was suggested. The blood picture was improving. After a normal reticulocyte response to intramuscular liver extract the values now stood at, red cells 2,060,000, hæmoglobin 59 per cent.

June 12th.—The patient had visual hallucinations. She saw fingers pointing at her from the walls of the ward. She remained in the hypomaniac state requiring watching day and night.

June 14th.—The patient was much quieter, and was moved to the main ward. Lumbar puncture revealed clear fluid under pressure of 280 mm. water, rising to 400 on jugular compression. Pandy test negative. No cells. Protein 0.02 mgm. per cent. Red cells now 2,780,000. Low grade of pyrexia persists.

July 9th.—Red cells, 3,810,000; hæmoglobin, 78 per cent (H). July 19th.—After a period of two weeks from June 14th the patient improved rapidly. The hypomania and papillœdema disappeared and she was returned to the ward, but on the 13th she became irrational and

violent, screaming and talking incessantly. This state persisted. Lumbar puncture still showed increased pressure. Right-sided pyramidal signs present. July 24th.—The patient was rational since last lumbar puncture. Pyrexia was subsiding; red cells 4,330,000 and hæmoglobin 98 per cent. Reflexes normal. Eye-grounds normal. Lumbar puncture showed normal fluid pressure.

August 9th.—Patient was discharged today, physically and mentally normal. She recalls little or nothing of the first month in the hospital. November 7th.—Since discharge the patient has been reporting to the hæmatological clinic once a fortnight for intramuscular liver extract. She is back to her normal weight and has been working since September 1st. She has been perfectly normal mentally since leaving the hospital.

DISCUSSION OF CASE

The occurrence of a psychosis in the course of pernicious anæmia is rare, though not unique. In 648 American cases delirium occurred in 44, definite delusions in 14, and hallucinations in 8. Dementia was definitely diagnosed in only 9 cases. A survey of the records of 107 cases of pernicious anæmia seen in the hæmatological clinic of the Montreal General Hospital since 1929 reveals only 3 cases with a definite psychosis. In two, the present case and one other, the patients were euphoric and hypomaniacal. All three had delusions and hallucinations, either visual or auditory. The third patient had periods of melancholia interspersed with phases of delirium and mania. With the disappearance of their anæmia, two of these three patients got entirely well and returned to their work. The third, not being treated adequately because of lack of cooperation, has not improved. The unique feature of the present case was the occurrence of signs pointing to an intracranial lesion sufficiently definite to lead two neurologists and a neuro-surgeon to consider, first an inflammatory lesion in the anterior cerebral region, and later, a cerebello-pontine angle tumour. It will be recalled that papillœdema and increased intracranial pressure persisted until the disappearance of the anæmia. The appearance of nystagmus, incoordination, and signs of pyramidal involvement led to the suspicion of a cerebello-pontine angle lesion.

Case Reports

PAPILLOEDEMA IN PERNICIOUS ANÆMIA*

BY EDWARD S. MILLS, M.D.,
Montreal

Mrs. B.B., aged 40, first came under observation on May 22, 1934, when she was admitted to the ward from the out-patient department with a tentative diagnosis of pernicious anæmia. Her complaints were: weakness of the knees, a yellowish colour to the skin, and a hissing sound in the right ear.

Family history.—Mother, one brother, and one sister alive and well. Father died at 65 from heart disease. One daughter, aged 19, is alive and well.

Personal history.—The patient had never been in the tropics. She works as a cleaner in a school. She had always been healthy.

Present illness.—The patient thought that her illness began about a month before admission, when she suddenly experienced a buzzing noise in the right ear which had been constantly present since that time. About a week after this she noticed a purulent discharge from the right ear. About the same time she began to experience a sensation of tightness about both knees which was aggravated by bending over or climbing stairs. Although she thought she had always been pale, a yellowish tinge to the skin was not noticed until three days before admission. At no time had she had headache, vertigo, earache, dyspnoea, or palpitation on exertion. Since the onset of her illness she had been nervous, irritable and upset by trifles. She had never had any gastro-intestinal symptoms or glossitis. Loss of weight, 18 pounds. She consulted Dr. A. Trefrey who recognized a severe degree of anæmia and referred her to the hospital for investigation.

Physical examination.—Temperature 98.3 F.; pulse, 96; respirations, 24. The striking features were her colour and her personality. Both skin and mucous membranes were decidedly pale. The sclerotics and skin were unmistakably of a lemon yellow tint. During the

examination she talked incessantly about herself and her physical condition. Though definitely euphoric, she was well oriented and quite rational. A small perforation was noted in the anterior inferior quadrant of the right tympanic membrane, through which purulent foul-smelling fluid exuded. The tongue was clean, protruded straight, and showed no atrophy or ulceration. Small flame-shaped hæmorrhages were visible in both retinae. The left disc appeared to be hazy in outline, though the right was normal. The pupils reacted normally. Examination of the throat, neck, lungs, heart and abdomen revealed no abnormalities. The blood pressure was, systolic, 162, diastolic, 80. Examination of the nervous system showed normal intelligence. The cranial nerves were intact. Coordination, sense of pain, heat, cold, position and touch were normal; vibration sense was normal in the right side, though definitely diminished over the left lower extremity. Two-point discrimination seemed somewhat impaired on both sides, though her reflexes were inconsistent. The abdominal reflexes were absent, though all other reflexes were present and equal on the two sides.

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With the evanescence of the papillœdema, the cerebrospinal fluid pressures returned to normal. All neurological signs and symptoms, including the papillœdema but with the exception of diminished pallæsthesia, vanished with the return of normal blood values. This would indicate that the entire clinical picture was associated with the pernicious anæmia.

TIC DOULOUREUX IN A YOUNG WOMAN

By K. A. BAIRD, M.A., M.D., C.M.,
Saint John, N.B.

In July, 1933, a young woman student, aged 20, began to have attacks of sharp pain in the right side of the face. The attacks were of comparatively brief duration but excruciatingly intense. They became more frequent, until by October they were occurring at about five-day intervals. During the Christmas holidays of 1933 the attacks became very frequent, sometimes even several coming on in one day. The patient naturally became nervous about them, and apprehensive as to the next attack. Shortly before this, on the advice of the physician then attending, several metallic fillings were removed from right upper molars and non-metallic ones substituted. The dental work was done under novocaine anæsthesia, because the patient had extremely "sensitive" teeth. She stated that touching an ordinary fork to a tooth would give her a considerable throb. Apparent improvement followed the change of fillings for about two weeks. Then the attacks began again. An x-ray of the teeth was believed to show no abnormality, except one slightly deformed tooth which the roentgenologist considered a possible cause. During the most severe period, near the end of 1933, the patient was feeling rather desperate, and this tooth (a molar) was removed under a local anæsthetic. Again apparent improvement occurred for over a week.

During the early days of the college session in January, 1934, attacks again became severe, even waking the victim at night. She lost weight and appetite and had to return home. Another tooth was removed, followed by improvement for a short time. The attacks again

returned, although perhaps not quite so frequent. Examination by an eye, ear, nose and throat specialist showed the right antrum to be free of disease. In June two more teeth were removed. The operation was followed by about two weeks' relief, after which attacks came on again.

The writer was consulted about the case in July, 1934. At this stage, after careful examination and study, two possible causes suggested themselves for examination along special lines. The eyes had not been examined for several years. A small metallic filling remained in the right upper first bicuspid,—the most posterior tooth left there. This filling did not ordinarily meet one in the lower jaw, but came sufficiently near to it that it seemed possible that under certain circumstances a small electrical charge might be generated and discharged into a branch of the trigeminal nerve, causing the paroxysm. In the case of the eye, an optometrist found that the patient was wearing glasses she had once been given to correct a hyperopic condition. Meanwhile her vision had changed until she had a myopic state, most pronounced in the right eye. The glasses were producing more strain, rather than relieving it. This was corrected by giving her glasses which produced normal vision without strain.

In the matter of the tooth, the dentist found an amalgam filling directly in contact with the pulp. There was no cement lining the cavity. Such a lining would have acted as a partial electrical insulator, and its absence would make the pulp sensitive to extremely small stimuli. The dentist was content to remove the filling and put a dressing in the cavity for several weeks. Later he devitalized the pulp and put in a gutta percha root canal filling and a porcelain cavity filling.

On an afternoon in July, 1934, the patient had a severe paroxysm of the usual type. A few hours later she began wearing the corrected lenses, and next morning had the filling removed from the bicuspid, under local anæsthetic as usual. She has not had a suggestion of the pain since that time (five months ago).

Comment.—It might have been more scientific, if less humane, to have had these defects corrected one at a time, but is it not probable that both eye and tooth conditions were con-

cerned as causal factors of the trigeminal neuralgia? The temporary relief after each previous dental operation was probably due to novocaine anæsthesia.

According to French (Differential Diagnosis), this was *not* a case of tic douloureux (major trigeminal neuralgia) because the patient was

not over thirty-five and because a cause, or causes, was found for the neuralgia. Clinically the case had all the other symptoms according to the authority quoted. Would it not be more helpful, as well as more in accordance with the facts, to classify all trigeminal neuralgias as those with cause discovered, and those without?

Clinical and Laboratory Notes

THE FUNDUS OCULI IN DIABETES MELLITUS*

BY S. HANFORD MCKEE, M.D.,

Montreal

In the fundus examination of 1,272 diabetics at the Clinic for Diabetes at the Montreal General Hospital, 127 persons were found with retinal lesions as follows:

Retinal hæmorrhages	22
Retinal arteriosclerosis	34
Neuro-retinitis	9
Retinitis	39
Diabetic retinitis	21
Proliferating retinitis	1
Lipæmia retinalis	1

All sorts of senile and arteriosclerotic retinal lesions occur in diabetics as well as in non-diabetics, but none of these lesions are found in diabetics free from arteriosclerosis. Nevertheless, it seems definitely established that there is one particular form of retinitis which occurs much more frequently in those arteriosclerotics who have diabetes than in those who have not. It would seem that there is some causal connection between the diabetes and the type and distribution of the arteriosclerotic process that accompanies it. In our series of 21 patients with diabetic retinitis all except 5 were also suffering from cardiovascular-renal disease.

Lipæmia occurs in a number of widely differing diseases, such as—chronic alcoholism, phthisis, asphyxia, nephritis, phosphorus poisoning, pneumonia, peritonitis, gout, starvation and diabetes. Lipæmia of the retina, however, is a rare condition. It was seen once in this series

of 1,272 cases and is probably the only retinal lesion pathognomonic of diabetes. It occurs when the fat content of the blood rises above the 4 per cent. This condition occurs *chiefly* in diabetes, but apparently not necessarily always, as has been shown by Wagener's report¹ of Lipæmia of the Retina in a case of lymphatic leukæmia, where the total blood fat reached 5 per cent.

Gray² believes that the first retinal lesion that occurs in diabetics consists in yellowish white spots near the macula, unaccompanied by hæmorrhages. These are in appearance, primary situation, and method of spread, the most characteristic lesion of diabetic retinitis. He also states that they are the earliest specific sign of a diabetic retinitis. This has not been my experience. In numerous cases, I have noted something as follows: "two tiny hæmorrhages, the only retinal change", or "a large number of punctate hæmorrhages over each retina; no exudate anywhere", and again "fundi normal except for two small hæmorrhages in the left retina", or "numerous tiny retinal hæmorrhages; no exudate". In fact, of the 127 persons with retinal lesions cited above, in 22 there were retinal hæmorrhages alone. Gray further states: "In diabetes the changes in the retinal vessels are seldom so pronounced as in simple arteriosclerosis. The earliest sign observed was a loss of translucency of the arterial wall, so that at points of crossing the vein lying beneath the artery could not be seen, as is usually possible in normal subjects. This was the only change in five cases, and in them the diabetes had lasted ten months. A more frequent change was a slight deflection of the line of a vein where it was crossed by an artery. The angle of deflection was never pronounced as occurs in pure arteriosclerosis. Alteration in the breadth of the vein on the distal side of the artery, tapering while beneath the artery to regain its normal size beyond, was seen. At the crossing the fine white lines described by Gunn, due to an increase in the fibrous tissue of the vessel walls, were evident in many cases, but this appearance was limited and never extended for any distance along the course of the vessels. The vessel changes in diabetes on the whole differ from

* Opening the discussion of a paper by Drs. M. L. Folk and S. Soskin at the meeting of the American Academy of Ophthalmology, Chicago, Ill., September, 1934.

other arteriosclerotic retinæ in being less marked."

In a recent investigation by Rabinowitch, Ritchie and McKee³ at the Montreal General Hospital, the records of 1,500 diabetics taken at random were examined and tabulated. It was found that examination of the fundus alone was not sufficient to detect vascular changes in all cases, though it did detect the condition more readily than x-ray examination of the size of the heart with a six foot plate, or x-ray examination of the blood vessels of the lower extremities for calcification. Arteriosclerotic changes were disclosed by examination of the fundus in 37.1 per cent of the cases, by calcification of the arteries in 30.5 per cent, and by x-ray of the heart in 18.1 per cent. By a combination of all methods the incidence of arteriosclerosis was found to be 62.6 per cent. This emphasizes the importance of using every available method for the detection of arterial disease.

The importance of this combination of methods is shown in a study of the relationship between duration of the diabetes and the incidence of vascular disease. Of 500 cases in which all methods were used, 356 had had diabetes for less than 5 years, and of these 193, or 55 per cent, had vascular changes. To exclude the effects of age, the cases were again divided into those 50 years and under and those over 50 years. Of 162 cases, 50 years and under, vascular disease was detected in 64, an incidence of 39 per cent.

One must not regard every arterial change noted in the diabetic as of diabetic origin; age and family history are important contributing factors. Drs. Folk and Soskin noted a greater incidence of retinitis in the poorly controlled diabetic. This coincides with our experience, published in 1929, with regard to the relationship between the degree of control of the diabetes and cholesterol, and lends support to the view which is rapidly gaining ground, namely, that increased blood cholesterol is an important etiological factor in the production of arteriosclerosis.

"Before the discovery of insulin, the duration of life from the onset of diabetes was but a few years. With better control by diet and insulin, the diabetic now lives long enough to develop cardio-vascular disease, whereas, in the past, death from coma or tuberculosis prevented him from so doing" (Rabinowitch). In view of this change, one can readily appreciate the importance of detecting vascular disease early.

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TUBERCULIN P.P.D. (PURIFIED PROTEIN DERIVATIVE)

BY ARNOLD BRANCH, M.D.,

Walkerville, Ont.

During the last few months a purified tuberculin, known as P.P.D., has appeared on the market, sponsored by the Medical Research Committee of the National Tuberculosis Association and manufactured by Parke, Davis & Company and the Mulford Laboratory of Sharp & Dohme. As this is the first serious attempt to absolutely standardize the skin-test reacting substance in tuberculin so that one is dealing with the actual weight in milligrams of a chemical entity rather than with serial dilutions of a mixture of substances, it would seem sufficiently important to draw the attention of the medical profession in Canada to the reasons which led the National Tuberculosis Association to foster its preparation and to briefly report the work so far published on the use of this tuberculin P.P.D. Those who are in need of more detailed information may consult the Supplement in the December, 1934, number of the *American Review of Tuberculosis*, contributed by White, Seibert, Reichel, Clark, Aronson and Long.

It should be made quite clear at the outset that nothing is claimed for any therapeutic value of this substance, nor is it stated whether it contains the lethal substance of tuberculin. Its properties as at present defined are limited to its containing an active skin-reactive substance in pure form which is not antigenic, i.e., one need not fear protein-shock reactions on its subsequent reinjection into an animal body. It is apparently, immunologically, of the nature of a hapten, since Seibert has shown that when mixed with aluminum hydroxide it does acquire true antigenic properties.

But why, one may naturally ask, even if not conservatively minded, give up such a tried and provedly valuable diagnostic agent as O.T.? For two reasons: (1) because it contains many unnecessary substances, i.e., salts, glycerine, carbohydrates from the bacterial growth, disintegration products from the medium, etc., and (2), much more important, because of its lack of standardization. To drive home this latter point may we quote from several authorities? Long states that the O.T. used at the Henry Phipps Institute in Philadelphia has 2½ times the potency of the O.T. of the Serum Institute in Copenhagen which latter is the designated International Standard. Dorset, of the Bureau of Animal Industry, Washington, writes that neither the power of tuberculin to kill tuberculous guinea pigs nor the intradermic testing enables one to *exactly* determine the potency of tuberculin; they can only bring out *wide* differences in potency. Watson, in discussing this

paper, recalled that Schroeder, who for years tested various lots of tuberculin, classified them as potent, sub-potent and super-potent, neither one representing a definite standard. O'Brien, of the Wellcome Research Laboratories, relates investigations showing a difference in potency of at least ten times in 13 samples of veterinary tuberculin examined. In other words, although no one questions the reliability of a potent O.T. for diagnosis in the individual, it cannot be accepted as a standard for comparing the degree of sensitivity in the same individual years hence, nor do statistical figures obtained in various parts of the world during epidemiological surveys admit of comparison. It is particularly in these latter examinations that the new tuberculin should prove its value.

The preparation of this material is briefly as follows. Three strains of human tubercle bacilli are grown on a suitable synthetic fluid medium, whose only available source of nitrogen is non-protein, i.e., an amino-acid asparagine. After 8 weeks' growth the cultures are sterilized by heat and the bacilli removed by straining through gauze. Tricresol is added and the filtrate concentrated to one-fifth of its volume by heat. Phenol is added to make 0.5 per cent, and it is then passed through a Mandler filter. It is next ultra-filtered to remove the crystalloids and concentrate the volume, precipitated with trichloroacetic acid, and treated with ether to remove the water and acid. The resultant light brown powder is the purified protein derivative. Its

molecular weight of 2,000 to 4,000 would serve to classify the molecule among the proteoses or polypeptides, and it may well represent the smallest molecule containing full tuberculin skin potency.

Tests performed with this on several thousand human beings elicited information which led the Tuberculin Committee to recommend its use in an initial dose of 0.00002 mg. and if this is negative in a second dose 250 times larger, i.e., 0.005 mg. Tested in comparison with O.T. the discrepancies are almost negligible. It only remained for the practical genius of Dr. L. T. Clark and his collaborators to find a method of accurately incorporating such minute quantities of this active material in a neutral lactose pill to make this product available for general use, and it is now obtainable in such form in the two strengths mentioned above.

The Committee of the National Tuberculosis Association is to be congratulated on their tenacity of purpose in bringing to a successful practical conclusion their interest in the brilliant chemical studies of Seibert and Long on the active principle of tuberculin. It is to be hoped that the future will show that their step was a milestone along one of the many ramifications of the disease, tuberculosis.

ADDENDUM. In the *Pharmaceutical Journal* of December 8, 1934, there is a description of a German product (Tebeprotin) which is apparently an attempt to market a somewhat similar substance, but it is put out as a solution.

PATHOGENESIS AND TREATMENT OF HAY FEVER.—E. Urbach advocates the confirmation of a diagnosis of hay fever by means of special tests, and condemns the older cutaneous and intracutaneous tests with pollen extracts as being too faulty. They may be positive when pollen, rubbed into the nose, does not cause an attack of hay fever, and may remain positive after desensitization; they may also be negative when hay fever is present. The author recommends a tampon saturated with a 20 per cent solution of pollen extract and applied for five minutes to the mucous membrane of the nasal septum. By way of control the mucous membrane should first be touched with a tampon saturated with some bland substance to determine whether a non-specific sensitivity is present. If the test is negative a minute quantity of dried pollen should be applied to the mucous membrane. A positive result is one in which a typical attack of hay fever with tickling, sneezing, and rhinorrhœa is produced. Treatment should be by specific desensitization, and Urbach considers that this should be oral. In mild cases 2 grams of barley peptone are given on the fasting stomach daily; in severe cases grass pollen peptones are administered in 2-gram doses twice daily; in very severe cases mixed pollen peptones in 0.1-gram doses twice daily. At present there is difficulty in obtaining enough pollen, but experiments are in progress to evolve pollen-antibodies. This method of treatment has the advantage of allowing of desensitization and treatment *solely during an*

attack of hay fever—pre-seasonal and all-the-year-round injections are condemned. There is, moreover, complete safety and painlessness, while the patient is independent of the doctor, except for the initial examination for the causal allergic factor.—*Wien. klin. Woch.*, August 31, 1934, p. 1073; *Abs. Brit. M. J.*

EFFECT OF HISTAMINE ON THE TUBERCULIN REACTION.—A. Alechinsky working with about 100 patients suffering from cutaneous and glandular tuberculosis of various types, introduced by ionization a 1 in 1,000 solution of histamine over an area of 10 by 15 cm. on the outer surface of the arm. The following day, when all trace of the histamine reaction had disappeared, a drop of tuberculin was applied to the treated area, and another drop to a control area on the opposite arm. When the reactions were read a day or two later a very marked difference was noticeable between the two arms. On the treated arm there was a papular, eczematoid, and strongly infiltrated area, while on the control arm the reaction was very much less severe. Similar observations were made on guinea-pigs. How the histamine acts is unknown, but the author draws attention to the fact that many agencies which affect the strength of the tuberculin reaction are also concerned with histamine liberation.—*C. R. Soc. de Biol.*, 1934, **117**: 1214; *Abs. in Brit. M. J.*

Editorial

THE NEED FOR UNITY IN THE CANADIAN MEDICAL ASSOCIATION

THOSE who are active in the work of the Canadian Medical Association, in particular, the Council, the Executive, and the members of the various committees, have had it increasingly borne in upon them that the structural-mechanism of medical organization in Canada is woefully defective. The machinery creaks somewhat from lack of oil, but more than all from lack of proper adjustment. It has frequently been asserted that the Provincial Medical Associations were not carrying out their obligation as affiliated organizations to cooperate with the Canadian Medical Association in organizing the medical profession of our country. This charge would seem to be borne out by an examination of the Constitution and By-Laws of the various provincial bodies. With one exception, none of them has written into its Constitution any procedure which would ensure such cooperation; indeed, in all but two the Canadian Medical Association is not even mentioned. Perhaps we should not be surprised at this, for we should remember that the many medical societies of Canada, provincial and other, have grown up as local needs demanded, and at a time when everyone was thinking provincially, since the regulation of medical education and practice and the maintenance of public health were mainly controlled by legal enactments of the various provinces. Moreover, it also must be regretfully admitted that some of the provinces have not always been represented on the Executive Committee of the national Association. These facts, and the additional consideration that there is a financial burden involved in attending meetings of the Council, explain in part why the general membership of the Association exhibits a certain amount of apathy and is not always articulate in regard to matters that concern the well-being of the medical profession as a whole. It would seem, from certain indications, to be dealt with immediately, that the time is ripe for a change. And the call for action has come, as once before in a notable emergency, from the West.

Our President, Dr. J. S. McEachern, in his New Year's Message to the membership, expressed the idea that our present methods are cumbersome and obsolete. He had long felt that something should be done about it. The thought came to him that it would be desirable to appeal to the Provincial Associations to re-write their Constitutions so as to ensure uniformity of procedure in all the provinces and provide for cooperation with the Council of the Canadian Medical Association in its many important activities. In this thought he had the support of his colleagues. Accordingly, Doctor Routley, the General Secretary, planned an itinerary covering the whole of Canada, which ensured that the two officials would meet the Executives of the various provinces and visit a number of District and Local Medical Societies as well, in order to lay the idea before them. The first concrete proposal came from the Executive of the Manitoba Medical Association. At a meeting in Winnipeg that body suggested that a new "set-up" of the Canadian Medical Association be made, with provision for Provincial Branches; and that one Constitution and set of By-Laws be drawn up, to apply to all Provincial Branches, each Provincial Branch being permitted to add any supplementary by-laws which might be required to meet its peculiar needs. In a unanimously supported resolution they stated that they were prepared to abandon the designation of "Manitoba Medical Association" and become "Canadian Medical Association—Manitoba Branch," provided that the other provinces did likewise. This is the message that Doctors McEachern and Routley have carried all over Canada. Those sponsoring the idea had in mind the arrangement now in effect in the British Medical Association, whereby the integral parts of the larger body are known as Branches and Divisions. This arrangement applies, in that case, even to other and distant countries in the Empire, such as Australia, New Zealand, and South Africa. The Associations in these countries

are known as The British Medical Association (Australasian Branch) and The British Medical Association (South African Branch). Dr. Alfred Cox, late Secretary of the British Medical Association, informs us that Organized Medicine in Britain was in a somewhat languishing condition until the inception of the new plan, since which time it has progressed with leaps and bounds. We have, therefore, the advantage of precedent and experience.

The trip of the President and Secretary, bearing their message over Canada, seems to have taken on the character of a triumphal march. They were, perhaps, surprised at the cordiality with which their message was received; there is no doubt they were delighted. After their meeting some fifteen hundred physicians in all the important centres it would seem safe to conclude that there is practical unanimity for a change in the direction indicated. Indeed, it would appear that our President and General Secretary had at last made articulate the aspirations of the medical men of Canada for a unified and, therefore, more effective national organization. As Doctor McEachern puts it, the medical profession of Canada are simply "waiting for leadership to show them a plan in which the details are worked out". Already the Executive Committees of the Medical Associations of Manitoba, Alberta, Saskatchewan, Prince Edward Island, British Columbia and Ontario have endorsed and accepted the principle of the change, and the other provinces are considering it.

The time is not yet ripe for any concrete proposals to be laid down. The matter has been under advisement by the Executive Committee of the national Association, and so soon as the new Constitution and By-Laws are adopted it will be possible to make some advance. It may be said in this connection that the Constitution referred to is being designed to permit of the changed relationships we have in mind. When a definite plan has been drawn up it will be duly submitted to the Provincial Associations for their consideration and action. In the meantime, the Executive Committee of the Canadian Medical Association would be assisted in their work if the various Provincial Executives, and, indeed, private members of the profession, would send in their comments on

the situation and offer constructive criticism.

We venture to place certain pertinent facts before our readers. As things have been developing during the last few years, it has become evident that fuller cooperation between the medical men of Canada is imperative. This is no time for provincial jealousies and provincial exclusiveness. Indeed, we believe that, so far as the medical profession is concerned, such are things of the past. The problems that confront us far transcend provincial bounds. They are national, indeed, international, world-wide. To mention but a few; they are Health Insurance, Cancer Control, Maternal Mortality, the development of the National Department of Health into "a real vital force", Medical Education, and Medical Specialism. Not one of these can be efficiently handled and controlled except by unified effort. They are all *national* rather than *provincial* or *local* problems. Let us rise to the occasion.

Further, it is a duty that every medical man should be a member of his local Medical Society, his Provincial Association, and, we believe, his National Association. They all need his support; his confrères everywhere need his support. All medical societies are cooperative, but they are more than that—the benefits they confer are not confined to their membership; they extend to the whole profession. Hence, the moral obligation that every medical practitioner should aid them with his money and with his counsel. We appeal to those outside the medical societies to join them at once. Numbers make strength.

Let us see how the Canadian Medical Association stands. The following figures, which are as accurate as we can make them at the moment, may be quoted.

<i>Number of Registered Doctors</i>	<i>Members of the C. M. A.</i>	<i>Per- centage</i>	
Alberta	620	258	41.61
British Columbia	775	329	42.45
Manitoba	638	193	30.25
New Brunswick	290	117	40.34
Nova Scotia	463	133	28.72
Prince Edward Island	63	28	44.44
Ontario	4,436	1,112	25.29
Quebec	2,916	369	12.99
Saskatchewan	595	233	39.15
Total	10,796	2,772	25.67

Or, grouped by areas:—

<i>Total Registration</i>		<i>Members of the C. M. A.</i>	<i>Per- centage</i>
Alberta	2,628	1,013	38.54
British Columbia . .			
Saskatchewan			
Manitoba			
Ontario	4,436	1,112	25.29
Quebec	2,916	369	12.99
New Brunswick	816	278	34.06
Nova Scotia			
Prince Edward Island			

These figures are illuminative. The East and the West stand out pre-eminently, yet all could do better. We think unification would help. The idea is a big one and is attractive. Let us link up the Provincial Associations with the national Association. All will benefit in increased numbers, in

increased usefulness, and in increased power. We have already seen what can be done by the profession with a well-thought-out plan and concerted action, notably, in the case of the western provinces. For years the profession has been exploited by various agencies, benevolent, municipal, and legislative, for a time with their good will, latterly, under a sense of injustice. That any measure of relief has been obtained is due to cooperative effort. Unification of the local and provincial medical bodies with the National Association will help still more. No doubt there are practical difficulties in the way but they are not insuperable. With common-sense, mutual forbearance, and good will they can be overcome.

A. G. N.

FEDERAL AND PROVINCIAL ENACTMENTS AFFECTING THE USE AND SALE OF DRUGS AND MEDICINES

UNDER the powers allotted to the provinces by the British North America Act education was included, and though this provision was doubtless intended to cover non-professional education, professional education in Medicine and Pharmacy became a subject of Provincial Legislation, and Provincial Colleges of Physicians and Surgeons and Colleges of Pharmacy were created.

The legislation establishing these professions had certain effects upon the sale of drugs and medicines.

(a) *Re* the British Pharmacopœia, the Ontario Pharmacy Act, R.S.O., 1927, chap. 199, section 26, states:—

"Unless the label distinctly shows that the compound is prepared according to another formula, every compound named in the British Pharmacopœia shall be prepared according to the formula directed in the latest edition published 'by authority' until the College of Physicians and Surgeons of Ontario selects another standard, and thereafter according to each standard."

It is obvious that until the two Colleges act no new pharmacopœia really becomes official or binding on the two professions in the province. Such action by the Colleges may occur in different provinces at different dates, yet the control of the actual drugs as regards purity and conformity with the

Pharmacopœia rests with the Federal Department of Health under the Food and Drugs Act. As many drugs are shipped from province to province the adoption of standards of quality and purity should become operative in all the provinces at the same time, and the notification of the date at which such a new Pharmacopœia should become the guide should be a Federal matter. Indeed, the Federal Department of Health was forced to set a date for the Dominion on the last revision of the British Pharmacopœia 1932, though doubtless such action was not in conformity with Provincial legislation.

(b) *Re* poisons. Provincial Pharmacy Acts have long required that drugs, with the exception of a limited number of simple ones, could only be sold by a pharmacist. All substances considered by provincial authorities as poisons and included in a schedule to the Acts could be sold by pharmacists only under certain regulations. The provisions were intended to protect the public against suicidal or homicidal poisoning. Yet Federal Legislation under the Pests Act runs counter to such Provincial Legislation. Further, the Federal Patent and Proprietary Medicine Act contains provisions in regard to the drugs that may be used in such proprietary

or patent medicines (see Section 7). This Act undoubtedly limits the privileges of the pharmacists exercised prior to the passing of this legislation. Again, under the Opium and Narcotic Drugs Act, certain provisions were made in regard to the prescribing by physicians and dispensing by pharmacists of opium and its derivatives, or certain of them, and of cocaine. Under this Act codeine is not so controlled, but this drug is commonly found in the schedules to the Pharmacy Acts of the provinces.

The so-called Poison Schedules of the various provinces do not agree with other, and, as shown above, the provincial regulations are, or may be, at variance with those of Federal Acts. It would be an advantage to Medicine and Pharmacy were the whole control of the sale and the definitions of poisons under Federal Legislation.

These are the main points, but a detailed examination of the Patent and Proprietary Drugs Act, the Opium and Narcotic Act, and of the Pharmacy Acts of the various provinces reveals that, owing to legislation by the Federal and Provincial Governments, introduced for different purposes, but affecting the physicians and pharmacists in their work, there are many details in which conflict does or may occur. Consequently, it should be an advantage were all questions in regard to the purity of drugs, their preparations, their sale and distribution entirely a Federal matter, while the questions arising out of medical and pharmaceutical education might remain Provincial, though it would be even better were these Federal and the questions relating to professional ethics and personal character, etc., Provincial.

V. E. HENDERSON.

Editorial Comments

The First Annual Report of Hospitals in Canada for the Year 1932

This report emanates from the Dominion Bureau of Statistics, Ottawa, and is an important document. It marks a departure and a distinct advance, as previous to the year 1931 such statistics on a Dominion-wide basis were not available. The report is, in effect, a continuation of the "Census of Hospitals", taken in 1931, which it had been decided, with the cooperation of the Provincial Health Departments, should be published annually. The data given were compiled from returns made by each class of hospital in Canada. Some figures may be quoted for general information.

"There are in operation in Canada 860 hospitals, classified as follows:— Public, 589; Private, 214; Dominion, 35; and Incurable, 22. Mental and incurable hospitals are reported on separately, so that the data given below, taken from the report, do not apply to them.

"The bed capacities of all hospitals operating were 51,577 beds. The percentage of these beds occupied during 1932 was 64.0. This is equivalent to saying that the bed capacity was occupied 64 per cent of the total time. The number of admissions was 588,761; live births 67,294, still births 2,888, and the total under treatment 622,069. The total collective days' stay, excluding infants born in hospital, was 12,048,923 days, and of infants born in hospital, 905,139 days, or a total collective days' stay of 12,954,062 days, which means that on an average every man, woman and child in Canada spent 1.3 days in hospital during 1932. Hospitals numbering 409 reported as giving 2,566,005 days' care to indigent patients. The average number of patients per day in hospital was 33,011 and the average length of stay of all patients was 19.3 days. The number of discharges was 632,975 and the number of deaths 27,342. The

number of patients treated in Out-patient Departments totalled 710,600.

"The number of hospitals having x-ray facilities was 482; Clinical Laboratories 349, Physical Therapy Departments 215; and Out-patient Departments 216.

"The number of doctors attending patients during the year was 11,416; number of salaried physicians on staff, 726; number of interns, 733; number of graduate nurses, 5,210; number of student nurses, 9,472; all other employees, 16,349, a total personnel of 33,063.

"There were 705 hospitals which reported receipts from paying patients of \$14,709,713; 716 hospitals reported \$34,141,878 for maintenance receipts and \$38,550,931 total receipts during the year.

"Five hundred and seventy Public Hospitals reported 11,595,274 days' care, at a total maintenance cost of \$33,294,513, or at the rate of \$2.87 per day; 146 Private Hospitals reported 304,064 days' care, at a total maintenance cost of \$979,086, or at the rate of \$3.22 per day; 26 Dominion Hospitals reported 675,321 days' care, at a total maintenance cost of \$1,846,321, or at the rate of \$2.73 per day; 22 Incurable Hospitals reported 853,663 days' care, at a total maintenance cost of \$1,099,205, or at the rate of \$1.30 per day.

"Summarizing the above, we find that the cost of maintenance of patients in 764 of the 860 hospitals operating was as follows:—

In 570 Public hospitals	\$33,294,513
In 146 Private hospitals	979,086
In 26 Dominion hospitals ...	1,846,321
In 22 Incurable hospitals ...	1,099,205
In 764 hospitals	\$37,219,125

"In the 19 Public Hospitals that did not furnish cost of maintenance, the collective days' stay was 184,652, which, at the average cost per day of \$2.87 for Public Hospitals, gives an estimated cost of \$529,951; in the 68 Private Hospitals that did not furnish cost of maintenance, the collective days' stay was 56,940 which, at the average cost per day of \$3.22 for Private Hospitals,

gives an estimated cost of \$183,347; in the 9 Dominion Hospitals that did not furnish cost of maintenance, the collective days' stay was 23,207, which, at the average cost per day of \$2.73 for Dominion Hospitals, gives an estimated cost of \$63,355.

"The estimated cost of those hospitals not furnishing maintenance costs is as follows:—

In 19 Public hospitals	\$ 529,951
In 68 Private hospitals	183,347
In 9 Dominion hospitals	63,355
Total of 96 hospitals	\$ 776,653
In 764 hospitals	\$37,219,125
In 96 hospitals (est.)	776,653
Total of 860 hospitals	\$37,995,778."

This report is a valuable, indeed, an indispensable document, reflecting great credit on the Department, and is well worth digesting.

A.G.N.

The late John James Rickard Macleod, M.B., Ch.B., LL.D., F.R.C.P.

John James Rickard Macleod spent ten of the most active years of his life in the University of Toronto. His research work was extensive and productive and his lecturing program heavy. He was a particularly able teacher and his classes will long be remembered by those students who were fortunate enough to pass through his hands.

Professor Macleod was born in Cluny, near Dunkeld, Scotland, September 6, 1876. He received his early education in Aberdeen Grammar School and later graduated in Medicine from Aberdeen University. He was awarded the Anderson Travelling Fellowship and spent a year in the Physiology Institute, Leipzig. On returning to England he continued his post-graduate studies in Cambridge where he took his Diploma of Public Health. Professor Macleod went to the United States in 1903 as Professor of Physiology, Western Reserve University. He held this Chair for fifteen years prior to coming to the University of Toronto in 1918 as Head of the Department of Physiology. One of the outstanding physiologists of the day, Professor Macleod received many honours from various scientific societies. He was elected in 1923 Fellow of the Royal Society, London, of which he had been MacKinnon Scholar from 1900 to 1903. He was President of the American Physiological Society in 1922, and in 1923 was awarded, jointly with Dr. F. G. Banting (now Sir Frederick), the Nobel Prize in recognition of the discovery and development of insulin. In 1925 Professor Macleod was elected President of the Royal Canadian Institute in which he was always keenly interested. Perhaps the honour which meant most to Professor Macleod came when he was invited to return to his own University, Aberdeen, as Regius Professor of Physiology. This post he held until

his untimely death on March 16, 1935. Professor Macleod's main researches lay in the field of carbohydrate metabolism, but he did valuable work in many other fields. His publications are an indication of his wide range of interests, including as they do work on the chemistry of carbamates and purine metabolism, physiology of the intracranial circulation, ventilation and surgical shock, etc. His Text Book on Physiology is one of the most popular in English-speaking countries today. Professor Macleod will long be remembered in the University of Toronto as a man who devoted his mental and physical strength without reserve to the advancement of scientific knowledge and to the instruction of students. His own achievements in medical research, and the work done by young men trained under him, will perhaps constitute the memorial which he himself would have most highly prized.

C. H. BEST

Le Bulletin de l'Association des Médecins de Langue Française de l'Amérique du Nord

A new journal is before us. It is *Le Bulletin de l'Association des Médecins de Langue Française de l'Amérique du Nord* and is the official organ of that Association. It is published at 326 St. Joseph Boulevard East, Montreal, and appears quarterly. The active members of the Association receive the *Bulletin* free; for others the subscription is \$3.00 a year. The permanent committee of the Association, who are responsible for the publication, consists of Drs. P. Z. Rhéaume, Donatien Marion, J. A. Jarry, J. A. Vidal, all of Montreal; Albert Paquet, of Quebec; and Amédée Granger, of New Orleans.

The Association of French-speaking physicians of North America has been in existence for thirty years or more, but was incorporated by letters patent from the Province of Quebec only in 1924. Among its objects was "to bring together the various groups of physicians speaking the French tongue through a regular and permanent organization, to organize periodic congresses, to promote the material and scientific interests of its members by publishing a medical journal." The last-mentioned purpose was broached in 1919 at a Congress over which the late regretted dean of the Medical Faculty of Laval University, Dr. Rousseau, presided; after fifteen years of preparation, it was decided, at the recent Congress at Quebec, to put the matter to practical test. The *Bulletin* has for its main object the duty of preparing for the various Congresses and of publishing the proceedings of these meetings and the papers presented thereat. Its scope will not be local or provincial, but will be, rather, international, dedicated to the welfare of the members.

This, the first, issue presents a pleasing appearance. It is well produced. Besides giving an account of the proceedings of the Association at Quebec it has interesting references to the celebration at Gaspé of the four hundredth anniversary of the landing of Jacques Cartier, which event lent special colour to this particular Congress of the Association, which was held immediately after, towards the end of September. It gives a list of the eminent delegates from various medical schools and societies in France, Canada, and the United States. It gives many

of the papers presented in full; others, in abstract; and concludes with a *catalogue raisonné* of a number of old medical works, exhibited by Dr. Léo Pariseau, dealing principally with the subject of scurvy, a disease from which the sailors of Jacques Cartier, and indeed many others at that time and for long afterwards suffered. Altogether, there is a worthy presentation of the characters of a notable occasion. We welcome our new-born brother and wish him every success.

A.G.N.

Special Articles

THE HISTORY OF CÆSAREAN SECTION*

By J. P. BOLEY,
Windsor, Ont.

By Cæsarean section is understood the operation by which the child is delivered through an incision in the abdominal wall and the uterus. Vaginal Cæsarean section is the operation in which an incision is made *per vaginam* through the cervix and lower uterine segment. It does not properly come under Cæsarean section.

Cæsarean section is an exceedingly ancient operation. The oldest authentic record of a living child thus born is that of Gorgias, a celebrated orator of Sicily, 508 B.C. The operation on the dead woman has been done for ages, certainly in India, and possibly even by the early Egyptians. Numa Pompilius, one of the early kings of Rome, enacted in 600 B.C. the Lex Regia which expressly commanded the removal of the child before burial of its mother. This law persisted to the time of the Cæsars, when it became the Lex Cæsarea. From the latter designation the operation may have taken its name.

The term "Cæsarean" is usually associated with the birth of Julius Cæsar. His mother Aurelia died while he was still engaged in reducing Gaul to a Roman province. Those who hold that Cæsar was removed from his mother's womb by an incision are on shaky ground, but on the other hand it is possible that she survived the operation done for obstructed labour. Shakespeare's oceanic mind takes notice of the most interesting operation of antiquity. Macbeth's dream of "a charmed life, which must not yield to one of woman born" is rudely shattered when from Macduff's own lips come the words "Macduff was from his mother's womb untimely ripped." Scipio Africanus, the con-

queror of Hannibal, is also said to have been born by section.

There is no certainty that in those far-off times surgeons dared to have recourse to Cæsarean section for saving the life of the mother and child. Up to the last century the profession was very sceptical as to the success of the operation. The earliest account of this procedure in any medical book appeared about the year 1350. (Reference is made to the fact that it is a proper procedure after the death of the mother).

About the year 1500 the wife of a Swiss sow-gelder, by the name of Nufer, was pregnant for the first time. For days she had severe labour pains. The combined skill of a dozen midwives and barbers did not avail to deliver the patient. As there was no longer any hope of relieving her the husband said that if she would have confidence in him he would undertake an operation, which, by the grace of God, might possibly succeed. His wife replied that she would undergo anything to be relieved. The authorities at first turned a deaf ear to the husband's petition for permission to carry this out, but he was not one to take "No" for an answer. Returning with authority he told the patient's attendants that those having sufficient courage might remain in the room with him, otherwise they must clear out. After imploring Divine aid he laid his wife on a table, incised the abdominal wall, then the uterus, after which he quickly extracted the child. Several sutures were placed in the abdominal wall. The wound healed and the woman lived to be 77, and was able to bear several children, even twins, in the usual way, one of the children becoming a judge. This, to some authorities, has seemed too good to be true, and so it is held that our friend Nufer had merely to do with an advanced ectopic pregnancy. Another sow-gelder, some time later, is said to have removed the ovaries from his daughter, we are told, in consequence of her lasciviousness. As a result of the enrichment of the technique of operative midwifery by a simple

* A paper read at the meeting of the Medical Staff of the Metropolitan General Hospital, Windsor, on June 20, 1934.

sow-gelder, Cæsarean section was now done repeatedly. It came to be performed in a somewhat more becoming fashion, and chiefly by barbers.

With the name and age of Ambroise Paré, who lived from 1510 to 1590, is associated the reform of midwifery. Podalic version had been in oblivion since the time of the early Hindoos, but it was revived and elaborated by the French of Paré's day. This renewed interest in version gave obstetrics a great stride forward, and the practice of Cæsarean section on the living woman was promoted. Midwifery now fell at least partially into the hands of men, and from this time forward was liberated from its dependence on surgery and made a separate department.

François Roussett, physician to the Duke of Savoy, lived at the end of the 16th century and seems to have been the first writer to advise the operation on the living woman. His book, published in 1581, has the title "Treatise on Cæsarean section, which is the extraction of the child by lateral incision of the abdomen and uterus of the pregnant woman who cannot be otherwise delivered, and without prejudice to the life of the one or the other, nor impairing subsequent pregnancy." In this work he gives the details of fifteen successful cases which were probably not all ectopic pregnancies, as some have had the boldness to suggest. Roussett's monograph established the operation. Obstetricians generally opposed the operation because of the high mortality. Slowly, however, it became a respectable procedure in those forlorn cases where the patient would almost certainly have died without it. The report of Roussett's successful cases encouraged certain operators to perform it without the proper indications, and the operation fell into disrepute in some places.

The earliest generally accepted Cæsarean section was done in Germany in 1610. (Hernia of the gravid uterus with development of a living child). Trautman, of Wittenberg, was the operator, and the operation is well authenticated. The patient did very well until the twenty-fifth day, when she suddenly became faint and died within half an hour. The uterine wound was found to have already healed.

In succeeding years the literature frequently refers to this operation. A striking feature is that it was performed on the living woman for obstructed labour, and that the incision in the uterus was not sutured but left open. There was a persistent idea that the contraction and relaxation of the uterus forbade the use of the uterine suture. The maternal mortality was frightful, as the woman died from hæmorrhage or infection. Operators depended on the muscular contraction of the uterus to control the bleeding from the incision. No one dared to place sutures through the uterine wall, because in those days all sutures had to be removed, and

it was impossible to remove them from the uterine wall after the abdomen had been closed.

As we have seen, Cæsarean section was apparently not practised on the living subject till about the 16th century. The writers of the 16th and 17th centuries, although describing the operation and frequently detailing successful cases, do not claim to have performed the operation themselves. They merely abstract their account from the writings or sayings of usually distant surgeons. In the 18th century serious consideration was given to devising an operation that offered a reasonable chance for the life of both mother and child. The hazard of the operation remained so great that few surgeons were bold enough to attempt it, even in desperate cases. In the mid-period of the 19th century the mortality of several series of collected cases was 50 to 85 per cent. Tarnier stated that no successful operation had been performed in Paris during the 19th century. The responsibility of these results was due, first, to septic infection, the evils of which were especially felt in hospital practice; secondly, to postponement of the operation until the patient was almost moribund; thirdly, the failure to use uterine sutures. Closure in the few favourable cases was probably brought about by an inflammatory process which bound the uterus to the abdominal walls. Lebas, in 1769, was the first to use sutures in the uterine wound. He employed three stitches and left the ends long, so that they could be removed later. In view of the ignorance of asepsis and antisepsis, even this improvement did not do much to lower the mortality. Hæmorrhage, infection, and discharges of the lochia into the peritoneal cavity, continued to cause the death of the mother.

The earliest published operation in America is that done by John Richmond in Ohio, 1827. The patient was a coloured woman, in labour for thirty hours, suffering also from eclampsia with convulsions. As a last resort he operated, at 1 a.m., with a few instruments from a pocket case. The incision in the uterus was directly over the placenta, which was therefore removed before the extraction of the child. The abdominal wall was sutured and a drain placed in the lower part of the wound. Twenty-four days later the patient was up and around.

Harris, of Philadelphia, published in 1871 a statistical study of Cæsarean section in the United States. He collected 59 cases, with a mortality of 48 per cent. He found that sutures were used in only six cases, and in five of them the operation was done late in labour. He refers to Rodenstein, of New York, who advocated the use of sutures as a preventive of secondary gaping of the uterine wound and the escape of discharges into the peritoneal cavity, as well as the arrest of primary hæmorrhage. Commenting on this, Harris is of the opinion that it is a matter for future determination whether the tendency

of the suture to cause inflammation is not more than counterbalanced by its arresting hæmorrhage and preventing the discharge of lochia into the peritoneal cavity.

In 1877, Porro, of Pavia, Italy, devised an operation to avoid the dangers of hæmorrhage and infection from the large uterus which was poorly sewn up. After removing the child through the incision in the uterus a supravaginal hysterectomy was done.

A truly efficient uterine suture was introduced by Sanger, an assistant of Credé, in Leipzig in 1882. He insisted that the suturing of the uterus was essential. After careful suturing was carried out the results were as favourable as in the Porro-Cæsarean section, without the mutilation of the latter operation. Sanger, moreover, improved the technique generally. He used the median abdominal incision, median uterine incision with or without eventration of the uterus. Interrupted sutures were carefully placed in the uterine incision so that the hæmorrhage was controlled and the lochia did not discharge into the peritoneal cavity. In addition, extreme antisepsis was the rule. The operation of Sanger, called the "conservative Cæsarean section", came to be a fairly safe procedure. The Porro, or "radical Cæsarean section", still continued to be employed, but only in those cases where it became necessary to remove the uterus as the result of infection, tumour formation, or hæmorrhage.

In spite of all improvements and a refined aseptic technique, which appeared later, the classical Cæsarean operation left much to be desired. Firstly, it was not safe in the presence of infection. Secondly, post-operative complications were frequent; though seldom fatal, they were disturbing. Thirdly, peritoneal adhesions were often left, causing trouble later. Fourthly, the uterine scar might rupture in a subsequent labour. Fifthly, there was still a mortality of 1 to 10 per cent.

To obviate these faults Frank, of Bonn, in 1907 introduced an extraperitoneal Cæsarean section. This was to avoid the spread of infection from the uterine wound into the peritoneal cavity. His method was a transverse incision through the abdominal wall just above the pubes and down to the peritoneum. The parietal peritoneum was incised transversely at the level of the bladder. This was followed by a transverse incision through the visceral peritoneum at about the level of the bladder reflection. The peritoneum over the lower uterine segment was stripped upward and united by sutures to the upper end of the parietal peritoneum. In this manner a pocket was formed which walled off the peritoneal cavity from the site of operation.

He then incised the uterus transversely through its lower segment and extracted the child. The abdomen was closed without disturbing the sutured viscero-parietal peritoneum. He reported 13 such cases without a death. This was an important contribution and was followed by many modifications.

Hugo Selheim, in 1908, clarified the surgical anatomy of the parts, demonstrating the advantage of delivering the child through the zone of dilatation, or exit passage, rather than through the contracting part of the uterus. He devised several methods of approach to the lower uterine segment. His work forms a basis for all later modifications. More than twenty different varieties of the low operation have been proposed. All have in common the object of avoiding the manipulation in the general peritoneal cavity as much as possible, and of placing the incision in the uterus entirely in the lower uterine segment. The idea is that an incision in the lower uterine segment will obviate peritonitis and also rupture of the uterine scar in a subsequent labour. DeLee is a strong supporter of the low Cæsarean section, and urges its routine performance instead of the classical operation. We may say, therefore, that Selheim introduced the low Cæsarean operation and DeLee perfected and popularized it.

In 1924 Portes, of Paris, introduced an operation devised to do away with removal of the uterus in infected cases. An abdominal incision is made and the uterus is delivered through it unopened. Now the peritoneum at the lower angle of the wound is stitched to the cervix, making the abdomen water-tight around the cervix. Only when the entire abdomen has been closed is the uterus opened. The child and placenta are removed and the uterus sutured. The uterus is left lying on the abdominal wall and covered with moist dressings. Involution occurs in the usual way. After a month or more, or after the infection is gone, the abdomen is re-opened and the clean, involuted uterus is replaced. A number of infected patients who were thus treated have recovered, and in one case at least subsequent pregnancy has occurred. This operation has not gained much support in this country, the Porro section being preferred.

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Medical Economics

HEALTH INSURANCE IN CANADA

At the sixty-fifth annual meeting of the Canadian Medical Association, held at Calgary in June last, a report was received from its Committee on Economics, of which Dr. W. Harvey Smith, a past President of the British Medical Association, was the chairman. That report, which contains the Canadian Association's "Plan for Health Insurance in Canada," has now been published in full in a Supplement to the *Canadian Medical Association Journal* for September. It will be found of intense interest and great importance to all those in this country who are concerned with the establishment of a general medical service for the nation based upon an enlargement of the present national health insurance system, as well as to those who in other British Dominions are considering the desirability of setting up some similar system. The report is in three parts. In the first part the meaning and object of health insurance are examined; a description of the development and character of the German, French, and English systems is given; the elaborate report of the American Medical Association is critically analyzed; the British Medical Association's proposals for a general medical service are set out; and all the most usual general objections to health insurance are fairly and adequately considered. The second part of the report states fully the present position with regard to medical practice and to organized medical or health services in Canada as a whole and in its several provinces. The third part contains the Canadian Medical Association's plan for State health insurance, with a reasoned exposition of the principles on which it is based, and of the methods which it is proposed should be used for their practical application. The whole of this third part, and considerable portions of Part I, will be of paramount interest to readers in Great Britain.

It is obvious that conditions in Canada are in many respects similar to those which exist in the United States of America; in others, however, there is a more distinct likeness to those prevalent in this country, particularly in the trend of thought and in administrative practice. This is especially true of the large towns and more populous localities; but even in very sparsely populated areas the needs to be provided for are not dissimilar from those in the Highlands and Islands of Scotland, which have been met by a specially organized medical and health service. The tenor of the whole report makes it evident that its authors have profited by both American

and English experience. Negatively, they have seen from the American report on the costs of medical care, with its majority and minority sections and the disharmony to which they have given rise, how the subject should not be dealt with; and, positively, it is gratifying to note how nearly alike their conclusions and suggestions are to those which have been put forward for development in this country. Indeed, in its general outline the actual scheme proposed is practically identical with that set out in the British Medical Association's "Proposals for a General Medical Service for the Nation"; and the authors quote with approval, and incorporate in their scheme, the principles and conditions which were stated and discussed, as being absolutely essential, by Sir Henry Brackenbury in his address on "The Essentials of a General Medical Service" (reported in the *British Medical Journal* of March 4, 1933, and since published as a B.M.A. pamphlet) and in his article in the *New England Journal of Medicine* of April last, to which we drew attention in our issue of June 9th (p. 1036). These are, in brief, the right of all registered medical practitioners to be members of the service, the absence of interference between doctor and patient, the appropriate participation of the profession in administration, separation of medical benefit from cash benefits, provision of a full medical service, administration on an area basis and not through approved societies. A further most important agreement with the British Medical Association's "Proposals" is the insistence that the indigent patient must be provided for as an integral part of the scheme, and must be dealt with as nearly as possible on the same lines as those who are able to contribute in the ordinary way.

On the initiation of national health insurance in Great Britain historical reasons and existing facts appeared to justify the establishment of approved societies for the administration of cash benefits, and similar reasons and facts make it extremely difficult, if not impossible, to provide residential institutional treatment as one of the ordinary and universal benefits under a compulsory contributive insurance scheme. Canada is happily free from these particular disadvantages, and, learning from experience in this country and elsewhere, will doubtless be able to establish a more complete and less imperfect scheme. Some less important, but not negligible, features of the Canadian proposals may be noted. It is recommended that insured persons should pay individually some part of the cost of necessary medicines, and that at least an

early, and preferably a periodic, health examination of insured persons should be required. The remuneration of medical practitioners in each area should be according to the method which they collectively select, but the "contract-salary" method should be limited to areas with a population insufficient otherwise to maintain a general practitioner. The importance of the preventive aspects of medicine is emphasized: "It is not enough to render lip-service to the idea of prevention and then leave it all to the public health worker. State health insurance must mean the systematic practice of preventive medicine by the health insurance medical practitioners." Above all—and this is of great significance in view of certain American pro-

posals—the general practitioner and not the hospital must be the basis and the pivot of the service. "It is *not* intended to make the hospital a medical centre with full-time staffs, but an institution to provide hospital facilities for the use of the general medical profession in the proper care of their patients."

The entire medical profession of the Empire, as represented by the British Medical Association, will desire to congratulate the Canadian Medical Association on this admirable report, and to wish that Association success in pressing its proposals upon the governing and public health authorities of the Dominion and of its provinces.—Leading article in *Brit. M. J.*, 1934, 2: 775.

Association Notes

THE COMING CONVENTION AT ATLANTIC CITY

The Convention to be held in Atlantic City next June is an event of more than ordinary importance. For the first time in history the Medical Associations of the United States and Canada will join hands in promoting a scientific gathering. The Canadians are to be the guests of the Americans on this occasion and it is hoped that they will contribute of their best to the program and attend in great numbers, so as to show their appreciation of an unusual opportunity.

It is perhaps a work of supererogation to dilate on the advantages of Atlantic City as a convention centre. Its attractions as a pleasure resort are well known to multitudes of Canadians. They will, we trust, soon become known to still more. Its advantages as a convention city are unique. Easy of access, pleasant in situation, and convenient in lay-out, with a magnificent Municipal Auditorium and innumerable palatial hotels, Atlantic City meets the requirements in a remarkable way. The growth of Atlantic City is little short of phenomenal. Beginning as an obscure fishing-village about 1790, it is now a populous city and the premier watering place on the Atlantic coast. Its Boardwalk, some seven or eight miles long, is famous. The citizens, accustomed to conventions for years, are trained to cooperate intelligently in bringing success to every phase of convention activity and in making the visits of their guests pleasant and memorable. The hotel staffs understand and are sympathetic with the purposes of those holding conventions and the needs of particular groups. Haddon Hall, the hotel set aside for the Canadians, is conveniently situated on the ocean front, near to the Auditorium, and offers the best in accommodation and cuisine. You can take a bath in the sea *in your room!*—if you like.

It is hard to describe adequately the completeness and magnificence of the remarkable Auditorium. Every modern facility has been installed therein in anticipation of the needs of conventions and exhibitions. There are twenty meeting rooms which range in seating capacity from 100 to 40,000. The voice amplification system is the best that could be devised. There are two fine organs, one of them the largest in the world. The main exhibition hall provides a gross exhibit space of 268,000 square feet. There are conveniently placed outlets for supplying compressed air, steam, water, gas, electricity, drainage, and telephones to individual exhibitors. This Auditorium, the largest in the United States, is said to be a perfect combination of beauty and practical utility.

Always a favourite of vacationists, the glamorous city by the sea offers more diversions to visitors than any other city of its size in the world. Visitors can find practically any type of activity desired. Those seeking rest and relaxation can be rolled along the Boardwalk in wheel chairs, relax on benches situated along the ocean rail, recline on the comfortable sun decks of the piers well out over the ocean, or loaf in the sunshine on the beach front hotel decks that afford an unobstructed view of the surf and the Boardwalk. Majestic sailing yachts, speedboats, motor launches, canoes and other craft dot the waters of Atlantic City's Inlet where they pick up passengers either for a cruise out over the ocean or a trip along the comparatively calm waters of the Thoroughfare that separates the resort from the mainland. At the Inlet, giant sea planes make regular flights over the island to afford passengers an opportunity to see Atlantic City from the air. Land planes make a similar flight from the Municipal Airport, where ships from



The Boardwalk, Atlantic City

from all over the country are landing at periodic intervals.

Horseback riding can be enjoyed along the beach before and after the bathing hours, and at all times on the specially constructed track opposite the Heinz Pier. Saddle horses, pony carts and saddle ponies for the children are always available.

No one who has been at Atlantic City can ever forget the amusement piers, which extend in some instances almost half a mile out into the ocean.

The most famous is the Steel Pier, where the greatest variety of attractions can be witnessed for a nominal admission. It is impossible to take in all this pier's features in one visit of an entire day on the structure. Included in the program are famous stars of the stage, screen and radio, vaudeville, three motion picture houses, diving horses, acrobats of the tight rope who perform hundreds of feet above the ocean, minstrels, dancing, Hawaiian orchestras, high diving exhibitions, water sports and a variety of interesting exhibits.

One of the most fascinating spectacles that Atlantic City offers is the deep sea net haul, which takes place at the extreme end of Young's

Million Dollar Pier, more than 2,000 feet out over the ocean. Twice daily, at noon and 4 o'clock in the afternoon, the nets are hauled up, to reveal all sorts of specimens of deep sea life. Aquariums in Philadelphia, New York and Chicago feature strange creatures of the ocean that were caught in these nets, and the pier's own aquariums are always filled with fish of every description. Wild West shows with real cowboys and Indians, motion pictures, dancing and a variety of other attractions are presented along with the net hauls.

Lovers of art will enjoy a morning or afternoon on the historic Heinz Pier, where rare paintings, statuary and the unusual finds of scientific excavation parties are on exhibition.

Three splendid golf courses are within easy distance. The Linwood and Northfield Country Clubs and the Seaview Golf Club are just a few minutes' ride from Atlantic City, and there are municipally owned and conditioned tennis courts, both at the Inlet and at the Airport.

Of endless interest to visitors is the famous Absecon Lighthouse, which for years has served as a beacon to warn mariners of the treacherous Brigantine shoals. During certain hours, ascent to the top of the lighthouse is permitted, and the

breath-taking view out over the ocean is well worth the climb.

A visit to Atlantic City is not complete without seeing its two residential suburbs, Ventnor and Margate, where all manner of beautiful homes can be seen. Colonial mansions, Spanish villas, Italian triumphs of architectural beauty, set in the centre of sweeping lawns, and typical American homes, vie for attention with beautiful shrubbery and flower gardens. It is to Ventnor and Margate, and the Chelsea section of Atlantic City, that cottagers move for the summer months, creating a social whirl of their own. Names that are famous in the annals of society, statesmanship, the theatre, art and politics are listed in the cottage colonies.

Not only is Atlantic City attractive in itself, but it is rendered even more attractive because it is in convenient proximity to points of special historic interest — Washington, Gettysburg, Annapolis, Philadelphia, Valley Forge, Princeton, New York, and West Point. The motorist will find the trip to Atlantic City and back one of more than ordinary charm.

Go to Atlantic City. It is *different* — different in setting, different in architecture, different in

colour, different even in the quality of its air. *The Ocean is calling.*

General Information

All section meetings and all exhibits will be in Convention Hall on the Board-walk. The scientific exhibits and the technical exhibits will be open for visitors on the morning of June 10th. Section programs will begin on the morning of June 12th at 9.00 a.m., and will be continued through the afternoon of Friday, June 14th. Half of the sections will meet in the mornings and the other half in the afternoons.

The opening General Meeting, at which the President of the American Medical Association will be installed, will be held on Tuesday evening, June 11th. At this meeting, addresses will be delivered by the incoming President of the American Medical Association and the President of the Canadian Medical Association. Dr. J. S. McLester, President-Elect of the American Medical Association, will be installed as President of the American Medical Association on this occasion.

The President's reception will be held at the



Haddon Hall Hotel



The Auditorium

Ambassador Hotel on the evening of Thursday, June 13th.

Railroad passenger associations in the United States and in Canada have granted a rate of one and one-third the regular fare for the members of the two Associations who will attend the Atlantic City Session. Members of the Canadian Medical Association are advised that it will be necessary for them to secure certificates at the time they purchase their tickets to Atlantic City. These certificates, when properly certified at the Registration Bureau in Convention Hall and properly validated by agents of the railroads, who will be at the Convention Hall for the purpose, will entitle their holders to purchase return tickets at one-third the regular fare. In order to secure the benefit of the reduced rates, return trips must be made over the same routes as the going trips.

The Osler Oration

The Osler Oration will be delivered by Dr. Lewellys F. Barker of Baltimore on Thursday, June 13th, at 2 p.m. in the Ballroom, Second Floor, Convention Hall.

Transportation Facilities

ROLLING CHAIRS

Special rates will be granted on chairs of the Shill Rolling Chair Company to persons wearing Convention Badges. Between Seaside Hotel and convention hall or between Hotel Chelsea and convention hall, in either direction, the charge will be 50 cents for one, two or three passengers.

JITNEY SERVICE

The fare along Pacific Avenue from Maine Avenue to Jackson Avenue, the border of Ventnor, is 10 cents; delivering a passenger at the Boardwalk or elsewhere on a cross avenue is 10 cents extra. Twelve tickets are sold for \$1.

AUTOMOBILE PARKING AT THE CONVENTION HALL

There is a garage located in the Auditorium, directly under the arena and the assembly hall, which will be a real convenience to those physicians who drive to the annual session. This garage accommodates 500 cars. The charge will be \$2.50 for the period of the convention.

The Scientific Exhibit

The Scientific Exhibit will occupy part of the main floor and the stage of the Atlantic City Auditorium, with entrances from the Technical

Exhibit near the registration desks. The same general arrangement of booths and decorations will be carried out as in former years. In addition to the group exhibits sponsored by the fifteen sections of the Scientific Assembly there will be several motion picture programs running simultaneously, symposium exhibits on cancer, tuberculosis and syphilis, and special exhibits on obstetrical and gynæcological hæmorrhage, on the relation of psychiatry to the physician in general practice, and on acute infections of the central nervous system in children, all under the direction of various section exhibit committees. The special exhibits subsidized by the Board of Trustees include diabetes, nutrition, prevention of asphyxial deaths, and vaccines and serums.

Admission to the Scientific Exhibit will be limited to individuals wearing Fellowship or other badges of the convention and to guests to whom special cards of admission have been issued. The public will *not* be admitted to the exhibit.

Entertainment

THE OPENING GENERAL MEETING

The Opening General Meeting will take place on Tuesday evening, June 11th, at 8 o'clock, in the Ballroom of the Convention Hall.

THE PRESIDENT'S RECEPTION

The President of the American Medical Association will be honoured with a reception and ball to be held Thursday evening, June 13th, at 9 o'clock, at the Ambassador Hotel.

DINNER FOR DELEGATES

A dinner and entertainment in the Submarine Grill of the Traymore Hotel is being arranged for Monday, June 10th, from 7 to 11 p.m., for delegates and officers of the American Medical Association and of the Canadian Medical Association.

SPECIAL ENTERTAINMENT AND DANCE

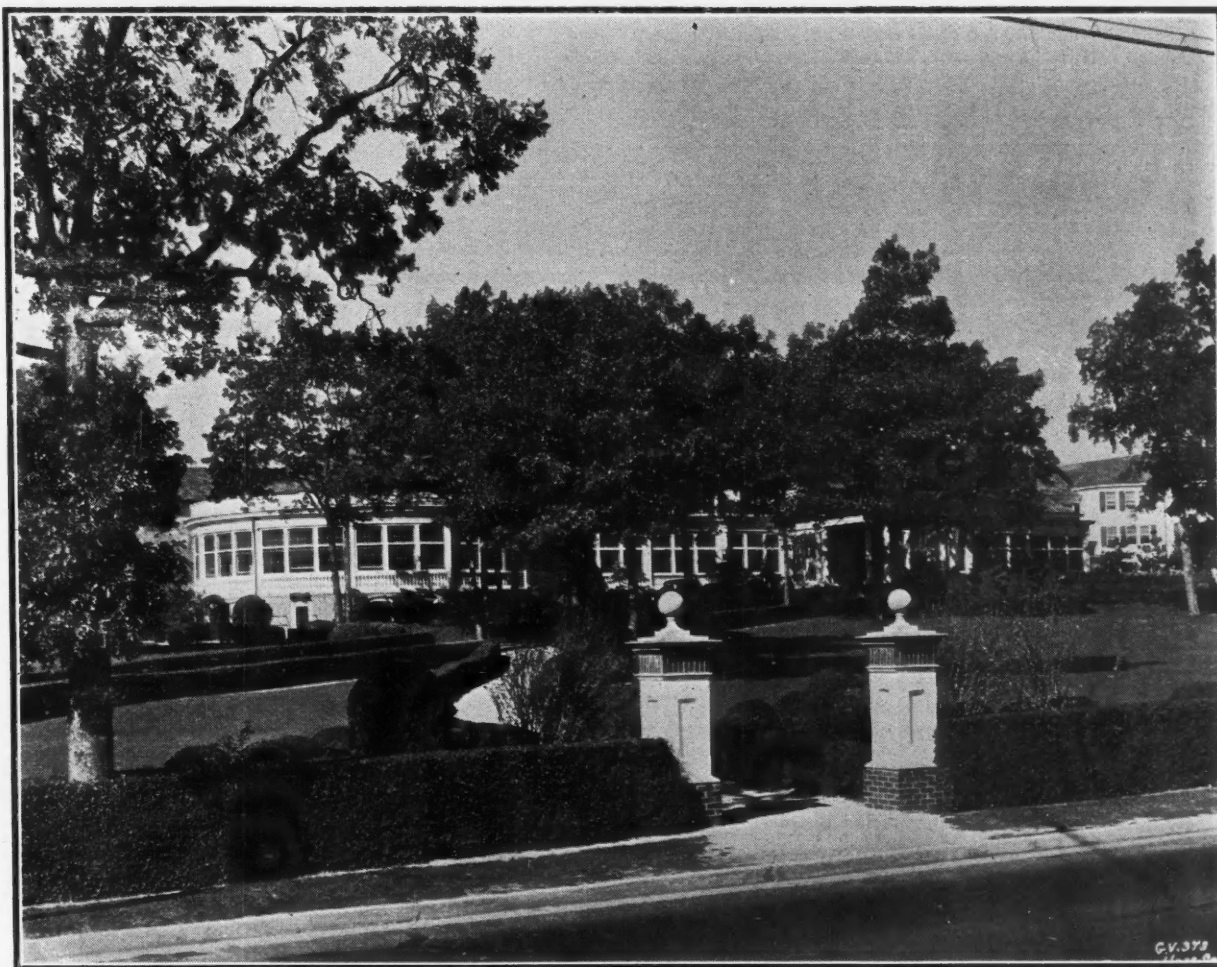
On Wednesday evening, June 12th on the Steel Pier, a special entertainment and dance is being arranged, which will be informal.

MEDICAL VETERANS

The Medical Veterans of the World War will hold a meeting on the evening of Wednesday, June 12th.

"BRING-YOUR-HUSBAND" DINNER

Arrangements are being made by Hudson and Essex counties for the annual "Bring-Your-Husband" Dinner for women guests of the American Medical Association and of the Can-



Seaview Golf Club

adian Medical Association and their husbands. This dinner will be served in the main dining room of the Traymore Hotel on Thursday evening, June 13th, at 7 o'clock. Tickets are \$2.50.

WOMEN PHYSICIANS OF THE AMERICAN MEDICAL ASSOCIATION

The women physicians of the American Medical Association will meet socially in Atlantic City on the Sunday and Monday preceding the opening of the session, stopping en route in Philadelphia on Saturday, June 8th, to attend a special program at the Woman's Medical College of Pennsylvania.

While in Atlantic City the medical women will make the Marlborough-Blenheim the headquarters for their various social activities, which, during the session of the American Medical Association, will be confined strictly to meal hours, as these dining programs have been found so enjoyable at previous sessions. On Sunday and Monday, social affairs, including sight-seeing trips, will be continued throughout the day.

The Federation of Medical Women of Canada is uniting with the American women to make these meetings successful.

WOMAN'S AUXILIARY

All women attending the annual session of the American Medical Association and the Canadian Medical Association, whether Auxiliary members or not, are invited to participate in the entire program of the Woman's Auxiliary.

The headquarters will be located in the Hotel Traymore, where all women are requested to register, securing tickets for all functions and making arrangements for golf and for bus rides at the entertainment desk.

MONDAY, JUNE 10TH.—9 p.m. Reception and musicale, honouring the wives of the members of the Canadian Medical Association. Ritz-Carlton Hotel.

TUESDAY, JUNE 11TH.—8 a.m. Southern breakfast. Submarine Grill, Traymore Hotel. Arrangements by Southern Auxiliaries. Tickets \$1.

1 p.m. Luncheon, Hackneys. Followed by chair ride, sail, boat ride or sightseeing trip of Atlantic City. Tickets \$1.50.

FRIDAY, JUNE 14TH.—9 a.m. Kickers' Golf Tournament, Northfield Country Club. Tee off at 9.30 a.m., Northfield Country Club. 1.30 p.m. Luncheon, Northfield Country Club. Tickets \$1.10; or

9 a.m. Deluxe tour. Luncheon en route. Starting point, Hotel Traymore. An interesting trip through the South Jersey mainland, visiting historic points and commercial industries peculiar to this section. Leaving Atlantic City via Absecon and the Seaview Golf Club, passing Chestnut Neck Revolutionary War Monument,

through the fishing villages of New Gretna and Tuckerton, visiting the transatlantic wireless-radio towers, erected before the World War by the imperial German government, through the Bass River state forest of stunted trees, through the cranberry bogs of South Jersey, then the Renault wine cellars at Egg Harbor, visit to Pleasant Mills, Weymouth and Mays Landing, tour along the Egg Harbor River, famed during Revolutionary times for the shelter of vessels carrying contraband cargo, then to Atlantic City via Somers Point and Longport. Frequent stops are made on this trip. Tickets \$3.50.

MRS. SAMUEL L. SALASIN,

General Chairman of Arrangements.

MRS. CARL A. SURRAN,

Chairman of Entertainment.

To the Canadian Ladies

It is with a great deal of pleasure, that I, in the name of the Woman's Auxiliary to the American Medical Association, extend greetings to the wives of the members of the Canadian Medical Association.

We are the wives of some fifteen thousand American physicians, trying in a quiet way to help in the spread of authentic health information, to encourage friendliness among physicians' families, and to assist our County Medical Societies in any way that is requested of us. We will have our annual session at the same time that the American Medical Association holds its convention in Atlantic City, June 10th to 14th, with the Traymore Hotel as our headquarters. We are planning most interesting meetings, and the social program that is being arranged for our pleasure and diversion promises to be outstanding in its attractions.

To each and every event, we extend a hearty welcome. It is our desire that you share with us whatever may be of interest and pleasure to you. We hope that you will register at the Traymore Hotel. Reservations for all events will be made there. You will find an hostess on duty at Haddon Hall at all reasonable hours, and she will be glad to render any assistance within her power. We only hope that you will sense the warmth of the welcome that is yours, that what we are trying to do may be of interest to you, and that you will go away with the feeling that we are as friendly to you as our two great countries are to each other.

(Signed) MRS. ROBERT W. TOMLINSON,
President, Women's Auxiliary to the American Medical Association.

1021 Park Place,
Wilmington, Del., U.S.A.

Golf

The Executive Directors and Officers of the American Medical Golfing Association cordially invite the Canadian Medical Association to the

Twenty-first Annual Tournament of the A.M.G.A. to be held at Northfield Country Club, Atlantic City, on Monday, June 10th, as part of the American Medical Association meeting.

The American Medical Golfing Association is the golfing section of the American Medical Association. It has been in existence for twenty-one years, and has a total membership of 1,110, representing every one of the United States.

We sincerely trust the Canadian Medical Association will be able to accept this invitation. We shall arrange a special event with prizes for the medical golfers from the Dominion.

CHARLES LUKENS, M.D.,
President.

Golfers! Send in your names to Dr. Routley.

International golf will be played at Atlantic City on June 10th when members of the American Medical Golfing Association and golf enthusiasts of the Canadian Medical Association join forces at Northfield Country Club.

The American Medical Golfing Association's invitation to the Canadian Medical Association to hold a joint tournament this year has been accepted by Dr. T. C. Routley, General Secretary of the Canadian Medical Association, who replied: "I am sure our Canadian colleagues will appreciate highly the honour you have done them in asking them to be present at the Twenty-First Annual Tournament of the American Medical Golfing Association."

Two additional events will be added to the day's already generous program of nine events and seventy prizes:

1. The International Event, featuring the "President's Cup," a new trophy presented by Dr. Chas. Lukens, of Toledo, and nine other American prizes for our Canadian friends to carry back home.

2. The Canadian Event, featuring the "Ontario Cup," or championship trophy, and the other prizes of the Canadian Medical Association.

Many American golfers having medical friends in Canada are arranging matches for the international medical golf tournament of June 10th. It is expected that 200 players will tee off between 6.00 a.m. and 3.00 p.m. in this 36 hole and 18 hole competition. The Atlantic City Committee has arranged that free busses will leave from Haddon Hall; from the Shelburne Hotel; and from the Ambassador Hotel at 8.30 a.m., and will return from Northfield in the evening at 10.30 p.m. Dinner at 7.00 p.m., with Dr. Frank A. Kelly, of Detroit, as toastmaster, will be followed by distribution of trophies and prizes by Dr. Walt P. Conaway, Chairman of the Atlantic City Golf Committee.

For entry blanks, write Bill Burns, Executive Secretary, 4421 Woodward Avenue, Detroit, Mich.

Canadian Medical Association

HEADQUARTERS AT HADDON HALL HOTEL

MONDAY, JUNE 10TH

- 9.30 a.m.—Meeting of Council, West Room.
- 1.00 p.m.—Luncheon, Rutland Room; Installation of the President.
- 2.30 p.m.—Meeting of Council, West Room.
- 5.00 p.m.—Annual Meeting, Canadian Medical Protective Association, West Room.
- 5.30 p.m.—Meeting of Nominating Committee, Tower Room.

TUESDAY, JUNE 11TH

- 9.30 a.m.—Meeting of Council, West Room.
- 2.30 p.m.—Meeting of Council, West Room.

The Program of the General Scientific Meetings

The General Scientific Meetings arranged for the Cleveland session were so successful that they have been developed still more for the meeting to take place in Atlantic City from June 10th to 14th. The complete program of the General Scientific Meetings follows:

Monday, June 10th — 2 p.m.

- Empyema in Children—James M. Mason, Birmingham, Ala.
- Treatment of Deficiency Conditions—C. P. Rhoads, New York.
- The Relationship of Drug Therapy to Agranulocytosis—Roy R. Kracke, Emory University, Ga.
- Our Knowledge Concerning the So-Called Lymphoblastomas—Edward B. Krumbhaar, Philadelphia.
- Growth, Normal and Abnormal—William Boyd, Winnipeg, Man.

Tuesday, June 11th — 9 a.m.

- Evidence in Favour of a More Active Puerperium: a Study of Five Hundred Cases—H. B. Atlee, Halifax, N.S.
- Treatment of Diabetic Coma—Henry J. John, Cleveland, Ohio.
- Pitfalls to be Avoided in Abdominal Diagnosis—John M. T. Finney, Baltimore, Md.
- Diet in Treatment of Disease—Louis H. Newburgh, Ann Arbor, Mich.
- The Surgeon's Responsibility in Cases of Duodenal Ulcer—R. R. Graham, Toronto, Ont.

Tuesday, June 11th — 2 p.m.

- Recent Developments in the Field of Endocrinology—David P. Barr, St. Louis, Mo.
- Scope of Thoracic Surgery—John Alexander, Ann Arbor, Mich.
- Bone Changes in Certain Medical Diseases—A. H. Gordon, Montreal, Que.
- Uses and Abuses of Modern Gland Products in Gynecological Disorders—Emil Novak, Baltimore, Md.
- Advances in Therapeutic Technique—Bernard Fantus, Chicago, Ill.

PRELIMINARY PROGRAM OF THE SCIENTIFIC ASSEMBLY

THE OPENING GENERAL MEETING

Ballroom, Second Floor, Convention Hall

Tuesday, June 11th, 8 p.m.

Music.

Call to Order by the President, WALTER L. BIERRING.

Invocation. REV. WALTER BRUGGEMAN, Ventnor City, N.J.

Welcome to Atlantic City:—

HON. HARRY BACHARACH, Mayor of Atlantic City.

C. COULTER CHARLTON, President, Atlantic County Medical Society.

MARCUS W. NEWCOMB, President, Medical Society of New Jersey.

Address. HON. WALTER EDGE, Ex-Senator and Former Ambassador.

Music.

Introduction and Installation of President-Elect J. S. McLESTER, Birmingham, Ala.

Address:—The Breath of Life. J. C. MEAKINS, President, Canadian Medical Association.

Address:—Nutrition and the Future of Man. J. S. McLESTER, President, American Medical Association.

Presentation of Medal to Retiring President, W. L. BIERRING.

Music.

THE SECTIONS

The following papers are announced to be read before the various sections. The order here is not necessarily the order that will be followed in the Official Program, nor is the list complete. The Official Program will be similar to the programs issued in previous years and will contain the final program of each section with abstracts of the papers, as well as lists of committees, program of the Opening General Meeting, list of entertainments, map of Atlantic City, and other information.

THE PRACTICE OF MEDICINE

OFFICERS OF SECTION

AMERICAN MEDICAL ASSOCIATION

Chairman—GEORGE R. MINOT, Boston.

Vice-Chairman—M. A. BLANKENHORN, Cleveland.

Secretary—W. J. KERR, San Francisco.

CANADIAN MEDICAL ASSOCIATION

Chairman—DUNCAN GRAHAM, Toronto.

Secretary—K. A. MACKENZIE, Halifax.

Wednesday, June 12th—2 p.m.

Further Data on Artificial Pneumothorax in Experimental Lobar Pneumonia—L. M. LIEBERMAN and S. S. LEOPOLD, Philadelphia.

Artificial Pneumothorax in the Treatment of Lobar Pneumonia—F. G. BLAKE, M. E. HOWARD and W. S. HULL, New Haven.

Renal Amyloidosis—W. R. KENNEDY, Montreal.

The Frank Billings Lecture—E. LIBMAN, New York.

Pleural Shock—W. F. HAMILTON, Montreal.

Factors Causing Bronchiectasis: Their Clinical Application to Diagnosis and Treatment—W. P. WARNER, Toronto.

Thursday, June 13th—2 p.m.

The Antihormone Theory in Relation to Anterior Pituitary Physiology—J. B. COLLIP, Montreal.

Recent Advances in Knowledge of the Relationship of the Pituitary to Ovarian Hormones—D. P. BARR, St. Louis.

Chairman's Address (C. M. A.)—D. GRAHAM, Toronto.

The Osler Oration—L. F. BARKER, Baltimore.

Relation of Experimental Leukæmia of Animals to Human Leukæmia—J. FURTH, H. W. FERRIS and P. REZNIKOFF, New York.

Modern Concepts of Roentgen Therapy of Cancer—W. E. CHAMBERLAIN, Philadelphia.

Friday, June 14th—2 p.m.

Infectious Mononucleosis:

Part I: Clinical Aspects—C. A. MCKINLAY, Minneapolis.

Part II: Hematological Phases—H. DOWNEY, Minneapolis, and J. STASNEY, Rochester, Minn.

Chairman's Address (A. M. A.)—G. R. MINOT, Boston.

Dietary Factors in Health and Disease—W. R. CAMPBELL, Toronto.

The Importance of Rest and Liver Therapy in the Treatment of Subacute Combined Degeneration of the Cord—R. F. FARQUHARSON, Toronto.

SURGERY, GENERAL AND ABDOMINAL

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Wednesday, June 12th—2 p.m.

Significance of Normal and Morbid Formation and Distribution of Cellular and Non-cellular Constituents of Blood and Lymph—J. L. YATES, Milwaukee.

Erythrocytes—W. B. CASTLE, Boston.

Blood Protein and Hemoglobin—G. H. WHIPPLE, Rochester, N.Y.

Leukocytes—J. S. LAWRENCE, Rochester, N.Y.

Blood Sugar—C. H. BEST, Toronto.

Thyroxine and Adrenal Cortex Extract—E. C. KENDALL, Rochester, Minn.

Lymph—C. K. DRINKER, Boston.

Antigens and Antibodies—R. L. KAHN, Ann Arbor.

Summary from Internist's Point of View—J. C. MEAKINS, Montreal.

Summary from Surgeon's Point of View—G. W. CRILE, Cleveland.

Thursday, June 13th—2 p.m.

BLOOD DYSCRASIAS AMENABLE TO TREATMENT BY SPLENECTOMY

Differential Diagnoses and Pathology—E. S. MILLS, Montreal.

Hemolytotoxic Equilibrium and Emergency Splenectomy—C. A. DOAN, Columbus.

Surgical Procedure and After-Care—A. T. BAZIN, Montreal.

End Results—W. E. GALLIE, Toronto.

ANOMALIES IN BLOOD DISTRIBUTION

- Total Thyroidectomy for Intractable Heart Disease—D. D. BERLIN, Boston.
- Operative Treatment of Essential Hypertension—M. M. PEET, Ann Arbor.
- Non-operative Treatment of Anomalies of Peripheral Distribution of Blood—L. G. HERRMANN, Cincinnati.
- Experimental Peripheral Gangrene—E. J. McGRATH, Cincinnati.

Friday, June 14th—2 p.m.

TOXÆMIA AND SEPTICÆMIA

- Staphylococcus Antitoxin and Toxoid—C. E. DOLMAN, Toronto.
- Clinical Use of Staphylococcus Antitoxin and Toxoid—W. S. KEITH, Toronto.
- Principles of Treatment of Septicæmia—W. J. M. SCOTT, Rochester, N.Y.
- Infection by Anaerobic Gas-forming Bacilli—J. R. REEVES, Indianapolis.
- Neuro-Appendicopathy—L. C. SIMARD, Montreal.
- Significance of Pain and Vomiting in Cholelithiasis—R. M. ZOLLINGER, Boston.
- Transfusions of Jaundiced Patients—E. S. JUDD, Rochester, Minn.

OBSTETRICS, GYNÆCOLOGY AND ABDOMINAL SURGERY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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- Secretary—D. C. MALCOLM, Saint John.

Wednesday, June 12th—9 a.m.

- A New Biological Test for Hormones in Urine as Applied to Various Clinical Problems—A. E. KANTER, C. P. BAUER and A. H. KLAUANS, Chicago.
- The Effect of Progestin and Estrin on Human Uterine Contractions, and the Value of Progestin in the Prevention of Habitual and Spontaneous Abortions—F. H. FALLS, J. E. LACKNER and L. KROHN, Chicago.
- Certain Menstrual Disturbances Associated with Low Metabolic Rates—S. F. HAINES and R. D. MUSSEY, Rochester, Minn.
- Chairman's Address (C. M. A.)—J. R. FRASER, Montreal.
- Sterility: Analysis of Causes and Treatment—P. TITUS, Pittsburgh.
- Clinical Investigation of Functional Sterility—P. BLAND, A. FIRST and L. GOLDSTEIN, Philadelphia.

Thursday, June 13th—9 a.m.

- Modern Conceptions on Toxæmia of Pregnancy and their Influence on Treatment—J. R. GOODALL, Montreal.
- The Clinical Significance of Weight Changes in Pregnancy—H. B. VAN WYCK, Toronto.
- The Mechanism of Rotation in Occiput Posterior Positions—J. MANN, Toronto.
- Chairman's Address (A. M. A.): Syphilis and Pregnancy. A Clinical Study of 2,500 Cases—J. R. McCORD, Atlanta.

Thursday, June 13th—9 a.m.—Continued

- The Intravenous Use of Hypertonic Dextrose in Obstetrics and Gynæcology—H. B. MATTHEWS and V. P. MAZZOLA, Brooklyn.
- Hæmaturia as a Complication of Pregnancy—H. L. MORRIS, Detroit.

Friday, June 14th—9 a.m.

- Parasacral, Pudendal and Local Infiltration Anæsthesia in Obstetrics—B. E. TUCKER and H. B. W. BENARON, Chicago.
- Spinal Anæsthesia, with Particular Reference to its Use in Obstetrics—S. A. COSGROVE, P. O. HALL and W. J. GLEESON, Jersey City.
- Rectal Ether and Oil—J. T. GWATHMEY, New York, and C. O. McCORMICK, Indianapolis.
- Vinyl Ether Obstetric Anæsthesia for General Practice—W. BOURNE, Montreal.
- Cyclopropane Anæsthesia in Obstetrics—R. T. KNIGHT, Minneapolis.
- Ethyl Ether, Chloroform, Nitrous Oxide and Ethylene Anæsthesia in Obstetrics—E. W. BEACH, Philadelphia.

OPHTHALMOLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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Wednesday, June 12th—2 p.m.

- Chairman's Address (C. M. A.): Greetings from Canada—W. G. M. BYERS, Montreal.
- Chairman's Address (A. M. A.)—A. J. BEDELL, Albany.
- Papilloedema and Optic Neuritis: A Retrospect—LESLIE PATON, London, Eng.
- Exophthalmos Relieved by Orbital Decompression, with Report of a Case—M. COHEN, New York.
- Ectopia Lentis and Arachnodactylia—F. E. BURCH, St. Paul.
- Anisophoria—J. S. FRIEDENWALD, Baltimore.

Thursday, June 13th—2 p.m.

- Preventive Ophthalmology: Relation to the Causes of Blindness in Children—C. BERENS, New York.
- The Argyll-Robertson Pupil—N. P. SCALA, Washington, D.C.
- Kinetic Stereoscopes or Stereoscopic Phenomena of a Moving Observer—A. E. MACDONALD, Toronto.
- The Virus of Inclusion Conjunctivitis: Further Observations—P. THYGESON and W. F. MENGERT, Iowa City.
- Allergy and Cataract: Deductions Drawn from Clinical Studies—R. K. DANIEL, Rochester, Minn.

Friday, June 14th—2 p.m.

- The Control of Myopia—E. JACKSON, Denver.
- The Treatment of Herpes Ophthalmicus by X-rays—F. BADEAUX, Montreal.
- The Iodine Treatment of Herpes Cornæ, Based on Clinical and Experimental Data—T. GUNDERSEN, Boston.
- Intracapsular Extraction in the Average Practice—S. J. BEACH and W. R. McADAMS, Portland, Maine.
- Artificial Fever Therapy in Ocular Syphilis—A. M. CULLER, Dayton.
- New Ptosis Operation—M. E. TRAINOR, Los Angeles.

LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY OFFICERS OF SECTION

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CANADIAN MEDICAL ASSOCIATION

Chairman—W. J. McNALLY, Montreal.
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Wednesday, June 12th—9 a.m.

Chairman's Address (C. M. A.): Milestones in the Recent Development of our Knowledge of Hearing and Balancing—W. J. McNALLY, Montreal.
Carcinoma of the Larynx: A Plea for Conservative Surgery—NORMAN PATTERSON, London, Eng.
Aspects of Mineral Metabolism—D. L. THOMSON, Montreal.
A Study of Clinical Cases with Vertigo as a Cardinal Symptom—J. B. McMURRAY, Washington, Pa.
Neoplasms Involving the Middle Ear—L. A. SCHALL, Boston.

Thursday, June 13th—9 a.m.

Chairman's Address (A. M. A.): The Clinical Consideration of the Morphology of the Sinuses—J. J. SHEA, Memphis.
The Pædiatric View of Otolaryngology—E. C. MITCHELL, Memphis.
The Hormone Factors involved in the Evolution, Development and Growth of the Paranasal Sinuses—H. MORTIMER, Montreal.
Bone Proliferation in Accessory Sinuses: A Pathological Study—G. W. MCGREGOR, Toronto.
The Relationship of Bronchiectasis to Paranasal Sinus Infection—G. E. HODGE, Montreal.
Errors in Interpretation of Roentgenograms in Otolaryngology—F. M. LAW, New York.

Friday, June 14th—9 a.m.

Brucellosis in Otolaryngology—C. C. CODY, Houston.
Contact Ulcer of the Larynx—C. JACKSON and C. L. JACKSON, Philadelphia.
The Diagnosis and Differential Diagnostic Data of specific Types of Suppuration in the Petrosal Pyramid—S. J. KOPETZKY, New York.
The Value of Speech Training in Cleft Palate and Other Mouth Conditions—E. E. SCHARFE, Montreal.
Tuberculosis of the Larynx Requiring Tracheotomy—M. C. MYERSON, New York.

PÆDIATRICS

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Wednesday, June 12th—9 a.m.

Critical Interpretation of Clinical Observations—A. G. MITCHELL, Cincinnati.
Progress and Problems in Endocrinology—R. G. HOSKINS, Boston.
Cyanosis of the New-Born—A. G. BROWN and E. A. MORGAN, Toronto.

Wednesday, June 12th—9 a.m.—Continued

Therapeutic Results with the Ketogenic Diet in Urinary Infections—H. F. HELMHOLZ, Rochester, Minn.
Pulmonary Collapse in Children—G. L. BOYD, Toronto.
Iron and Its Availability in Foods—P. F. SUMMERFELDT, Toronto.

Thursday, June 13th—9 a.m.

When Pædiatricians take Inventory—F. P. GENGENBACH, Denver.
Milk Allergy and Its Basic Treatment—B. RATNER, New York.
Allergy and Immunity in Childhood Tuberculosis—H. P. WRIGHT, Montreal.
The Allergic Theory of so-called Thymus Death—G. L. WALDBOTT, Detroit.
Inadequacy of Present Dietary Standards—F. F. TISDALL, Toronto.
Body Type in Negro Children—L. T. ROYSTER, University, Va.

Friday, June 14th—9 a.m.

The Diagnosis of Congenital Syphilis—A. H. PARMELEE, Oak Park, and L. J. HALPERN, Chicago.
Systemic Thrush Infection—F. W. SCHULTZ, Chicago.
A Study of Immunization against Scarlet Fever in Charitable Institutions and Public Schools of Philadelphia—J. N. HENRY, Philadelphia.
The Development of the Therapeutic Use of Forced Perivascular (Spinal) Drainage—G. M. RETAN, Syracuse.
Active Immunization Against Poliomyelitis: Experimental and Human Studies—M. BRODIE and W. H. PARK, New York.
Meningococcal Meningitis in Children—J. B. NEAL, New York.

PHARMACOLOGY AND THERAPEUTICS

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Wednesday, June 12th—2 p.m.

Chairman's Address (C. M. A.)—V. E. HENDERSON, Toronto.
The Standardization and Potency of Digitalis Preparations—C. W. CHAPMAN and C. A. MORRELL, Ottawa.
The Use of Strophanthin in the Treatment of Auricular Fibrillation—H. E. RYKERT and J. HEPBURN, Toronto.
Response of Coronary Vessels to Various Organic Drugs—C. W. GREENE, Clumbia, Mo.
Treatment of Cardiac Pain—G. F. STRONG, Vancouver.
Clinical Experiences with Wheat Germ Oil (Vitamin E)—E. M. WATSON, London, Ont.

Thursday, June 13th—2 p.m.

Chairman's Address (A. M. A.)—C. H. GREENE, New York.
Hyperglycemia: Evaluation in the Treatment of Diabetes Mellitus—H. O. MOSENTHAL, New York.
Experimental Studies on Replacement Therapy in Adrenal Insufficiency—A. GROLLMAN and W. M. FIROR, Baltimore.

Thursday, June 13th—2 p.m.—Continued

The Biological Effects Following the continuous Administration of Pineal Extract to successive Generations—L. G. ROWNTREE and J. H. CLARK, Philadelphia, and A. M. HANSON, Faribault, Minn.

The Pharmacology of Testicular Hormones—D. R. McCullagh, Cleveland.

The Metabolic and Anti-obesity Actions of Dinitrophenol—M. L. TAINTER, W. C. CUTTING, A. B. STOCKTON and E. HINES, San Francisco.

The Treatment of Pellagra—T. D. SPIES, Cleveland.

Friday, June 14th—2 p.m.

The Clinical Significance of Problems of Absorption in the Human Gastro-intestinal tract—C. W. HEATH, Boston.

Comparative Effects of Pressor and Oxytocic Fractions of Posterior Pituitary Extract on Blood Pressure and Intestinal Activity—K. I. MELVILLE, Montreal.

The Diuretic Action of Intravenous Sodium Dehydrocholate—F. A. WEIGAND, Philadelphia.

The Diuretic Action of Potassium Salts—N. M. KEITH and M. W. BINGER, Rochester, Minn.

A Pharmacological and Therapeutical Study of Certain Choline Derivatives—J. KOVACS, I. S. WRIGHT and L. SAYLOR, New York.

Treatment of Acute and Chronic Brucellosis (Undulant Fever)—F. E. ANGLE, Kansas City.

PATHOLOGY AND PHYSIOLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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Wednesday, June 12th—9 a.m.

Honorary Chairman's Address: The Specificness of Streptococci—L. HEKTOEN, Chicago.

Development of Pathology Since 1900—W. L. BIERING, Des Moines.

Changes in Internal Medicine—J. B. HERRICK, Chicago.

Relationship of Pathological Training to Clinical Medicine—G. BLUMER, New Haven.

Advances in Immunity—S. FLEXNER, New York.

Thursday, June 13th—9 a.m.

Chairman's Address (A. M. A.): I Am Automatic—E. P. LYON, Minneapolis.

Essential Anatomy—A. KUNTZ, St. Louis.

Essential Physiology—A. J. CARLSON, Chicago.

Essential Pharmacology—D. E. JACKSON, Cincinnati.

The Role of the Autonomic Nervous System in the Causation of Pain—L. J. POLLOCK and L. DAVIS, Chicago.

Clinical Tests of the Functions of the Sympathetic Nervous System—G. E. BROWN, Rochester, Minn.

Indications for Surgery on the Sympathetic Nervous System—A. W. ADSON, Rochester, Minn.

Friday, June 14th—9 a.m.

Chairman's Address (C. M. A.): The Relation of Pathology to Medicine—W. BOYD, Winnipeg.

Positive Friedman Tests in Non-pregnant Individuals—E. P. McCULLAGH, Cleveland.

The Choice and Interpretation of Tests of Renal Efficiency—R. H. FREYBERG and L. H. NEWBURGH, Ann Arbor.

Susceptibility and Immunity in Relation to Vaccination in Acute Anterior Poliomyelitis—J. A. KOLMER, Philadelphia.

Reliability of Sputum Typing in the Pneumonias—J. G. M. BULLOWA, New York.

Alveolar Vents and Their Significance in the Human Lung—C. C. MACKLIN, London, Ont.

The Nature and Importance of the Reciprocal Cellular Equilibrium that exists between Lymphatic and Myeloid Tissues—B. K. Wiseman, Columbus.

Sex Determination, Sex Differentiation and Intersexuality, with Report of Unusual Case—E. NOVAK, Baltimore.

NERVOUS AND MENTAL DISEASES**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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Wednesday, June 12th—2 p.m.

Ventriculography with Colloidal Thorium Dioxide—W. FREEMAN, H. H. SCHOENFELD and C. MOORE, Washington, D.C.

Encephalographic Studies in Extrapyrimal Disease—S. P. GOODHART, B. H. BALSER and I. BIEBER, New York.

Meningitis: A Comparative Study of Various Therapeutic Measures—C. J. TRIPOLI, New Orleans.

Etiological Factors in Multiple Sclerosis—T. J. PUTNAM, Boston.

Experimental Ptosis in Monkeys and Chimpanzees—W. DEG. MAHONEY, New Haven, and DONAL SHEEHAN, Manchester, Eng.

Report of a Case of Alzheimer's Disease with Neuropathological Observations—J. A. HANNAH, Toronto.

Post-Traumatic Narcolepsy—G. W. HALL, Chicago.

Thursday, June 13th—2 p.m.

Chairman's Address (A. M. A.): Research in Psychiatry—H. D. SINGER, Chicago.

The Onset in Postencephalitic and Traumatic Behaviour Cases—E. D. BOND, Philadelphia.

A Study of Activity after Recovery from Rickets—L. H. ZIEGLER and A. KNUDSON, Albany.

Chairman's Address (C. M. A.)—A. T. MATHERS, Winnipeg.

Depression as a Part of a Life Experience—N. L. ANTHONISEN, Belmont, Mass.

The Intensive Treatment of Morphine Addiction—T. KLINGMANN, Ann Arbor, and W. H. EVERTS, New York.

The Psychiatric Hospital as an Institution of Learning—C. C. BURLINGAME and C. P. WAGNER, Hartford.

Friday, June 14th—2 p.m.

A Clinical Study of Seven Cases of Nervous Complications following Spinal Anæsthesia: Tissue Study in one Instance—S. BROCK, A. BELL and C. DAVISON, New York.

The Simulation of Intracranial Neoplasm by Lead Encephalopathy in Children—P. C. BUCY and D. N. BUCHANAN, Chicago.

Subtemporal and Suboccipital Myoplastic Craniotomy—W. CONE and W. PENFIELD, Montreal.

Clinical Aspects and Treatment of Chronic Subdural Hæmorrhage—F. C. GRANT, Philadelphia.

Paroxysmal Neuralgia of the Tympanic Nerve—T. C. ERICKSON, Montreal.

Cranio-cerebral Trauma: Pathological and Clinical Classification—C. H. MOORE, Birmingham, Ala.

DERMATOLOGY AND SYPHILOLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION***Chairman*—JEFFREY C. MICHAEL, Houston.*Vice-Chairman*—JAMES R. DRIVER, Cleveland.*Secretary*—HARRY R. FOERSTER, Milwaukee.**CANADIAN MEDICAL ASSOCIATION***Chairman*—J. F. BURGESS, Montreal.*Secretary*—PAUL POIRIER, Montreal.**Wednesday, June 12th—2 p.m.***Chairman's Address (A. M. A.):* Observations on the Therapy of Acne Vulgaris—J. C. MICHAEL, Houston.

The So-Called Mosaic Fungus as an Intercellular Deposit of Cholesterol Crystals—A. M. DAVIDSON and P. H. GREGORY, Winnipeg.

Rosacea Interpreted as a Bacteride from Focal Infection—H. FEIT, E. A. LASZLO and F. VERO, New York.

Lichen Simplex Chronicus—D. E. H. CLEVELAND, Vancouver.

Functional Studies in Patients with the Neurodermatoses—J. M. VAN DE ERVE, Charleston, S.C., and S. W. BECKER, Chicago.

An "Office" Technique for Treating Functional Neuroses as Complications of Organic Disease, with Special Reference to the Dermatoneuroses—J. H. STOKES, Philadelphia.

Histogenesis of Aberrant Lesions of Psoriasis—P. D. FOSTER, Los Angeles, and G. M. MACKEE, New York.

Thursday, June 13th—2 p.m.*Chairman's Address (C. M. A.):* Chronic Glanders in Man—J. F. BURGESS, Montreal.

The Treatment of Early and Late Congenital Syphilis in Children—F. R. SMITH JR., Baltimore.

A Study of Dementia Paralytica and Tabes with Reference to Precocious Development—D. O. POTH, B. F. BARNEY and U. J. WILE, Ann Arbor.

Artificial Fever Therapy of Syphilis—W. M. SIMPSON, Dayton.

A Study of the Comparative Value of Bismuth and Mercury Compounds in the Treatment of Early Syphilis—A. B. CANNON and J. H. ROBERTSON, New York.

Intradermal Test for Chancroids with Sterilized pus from Chancroidal Buboec—H. N. COLE and E. A. LEVIN, Cleveland.

The Balanitides—J. F. MADDEN, St. Paul.

Friday, June 14th—2 p.m.

Congenital Atrophy of the Skin with Reticular Pigmentation: Report of Two Cases—M. F. ENGMAN JR., St. Louis.

Fever Therapy of Mycosis Fungoides—J. V. KLAUDER, Philadelphia.

Granuloma Coccidioides: Report of Two Cases of a Chronic Hypertrophic Type—J. L. PIPKIN and C. F. LEHMANN, San Antonio.

Hodgkin's Disease of the Scalp—N. M. WRONG, Toronto.

Depth Dose Measurements for Dermatological Roentgen Therapy—G. C. ANDREWS and C. B. BRAESTRUP, New York.

Granuloma Annulare—M. H. GOODMAN and L. W. KETRON, Baltimore.

The Relation of the Endocrine System to Dermatology—W. O. TEICHMAN and F. J. EICHENLAUB, Washington, D.C.

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION***Chairman*—ROBERT H. RILEY, Baltimore.*Vice-Chairman*—HARRY L. ROCKWOOD, Shaker Heights, Ohio.*Secretary*—R. R. SAYERS, Washington, D.C.**CANADIAN MEDICAL ASSOCIATION***Chairman*—HON. W. J. P. MACMILLAN, Charlottetown.*Secretary*—A. GRANT FLEMING, Montreal.**Wednesday, June 12th—9 a.m.****SESSION ON PUBLIC HEALTH***Chairman's Address (A. M. A.)*—R. H. RILEY, Baltimore.

The Reduction of Diphtheria in Children Immunized with Toxoid—N. E. MCKINNON, Downsview, Ont.

Public Health Problems in New York City—J. L. RICE, New York.

Tuberculosis: The Interval of Supervisory Treatment and Prophylactic Control—J. G. CUMMING, Washington, D.C.

Age Distribution and Longevity of the Syphilitic—S. E. GOULD, Eloise, Mich.

Child Health Survey in Pre-school Children, conducted as CWA Project—J. LEVY, Newark.

The Importance of the Closure of Pulmonary Cavities for the Prevention of Tuberculosis—C. L. HYDE and C. R. STEINKE, Akron.

Mental Hygiene in Its Relationship to Public Health and Preventive Medicine—W. T. B. MITCHELL, Montreal.

Thursday, June 13th—9 a.m.**SESSION ON INDUSTRIAL HEALTH***Chairman's Address (C. M. A.)*—HON. W. J. P. MACMILLAN, Charlottetown.

Physical Survey of 47,000 CWA Employees in State of Virginia—F. J. WAMPLER, Richmond.

Solvents in Industry and Means of Overcoming Hazards—A. ROGERS, Brooklyn.

Asbestos—A. J. LANZA, New York.

Tuberculosis in Industry—R. V. WARD, Montreal.

Importance of Industrial Hygiene and How it can best be Handled through State Departments of Health—A. S. GRAY, Hartford.

Friday, June 14th—9 a.m.**SESSION ON HEART DISEASE**

The Etiology of Heart Disease, with Special Reference to the Present Status of the Prevention of Heart Disease—H. B. SPRAGUE and P. D. WHITE, Boston.

Observations on the Epidemiology of Rheumatic Fever—J. R. PAUL and M. B. LEONARD, New Haven.

The Heart in Hypertension—G. FAHR, Minneapolis.

The Rehabilitation and Placement in Industry of Those Handicapped with Cardiovascular Disease—W. D. STROUD, Philadelphia.

An Analysis in the Apparent Increase in the Heart Diseases—A. E. COHN, New York.

A Critical Analysis of Heart Disease Mortality—O. F. HEDLEY, Philadelphia.

SECTION ON UROLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION***Chairman*—STANLEY R. WOODRUFF, Jersey City.*Vice-Chairman*—THOMAS P. SHUPE, Cleveland.*Secretary*—J. H. MORRISSEY, New York.**CANADIAN MEDICAL ASSOCIATION***Chairman*—D. W. MACKENZIE, Montreal.*Secretary*—E. R. MYERS, Saskatoon.**Wednesday, June 12th—9 a.m.****SYMPOSIUM ON GENITO-URINARY ANOMALIES
AND THEIR TREATMENT**

The Rôle of Anomalies of the Upper Urinary Tract in the Causation of Surgical Conditions—R. GUTIERREZ, New York.

The Embryological and Clinical Aspect of Double Ureter—A. B. HAWTHORNE, Montreal.

Congenital Obstructions of the Female Urethra—W. E. STEVENS, San Francisco.

The Operative Treatment for Undescended Testicle—C. M. MCKENNA and E. E. EWERT, Chicago.

The Ectopic Pelvic Kidneys—O. MERCIER, Montreal.

The Surgical Treatment of Anomalies of the Upper Urinary Tract in Children—M. F. CAMPBELL, New York.

Cystitis Cystica—F. S. PATCH, Montreal.

Presentation of New Instrument for Transurethral Surgery (Demonstration Only)—C. W. COLLINGS, New York.

Thursday, June 13th—9 a.m.*Chairman's Address (C. M. A.):* Lymphatics of Lower Urinary and Genital Tracts: An Experimental Study, with Special Reference to Renal Infections—D. W. MACKENZIE, Montreal.**SYMPOSIUM ON RECENT EXPERIMENTAL
METHODS AND RESEARCH PROBLEMS
IN UROLOGY**

New Methods of Diagnosis in Neurogenic Lesions of the Bladder and Vesical Neck—L. G. LEWIS, Baltimore.

A Preliminary Clinical Report on the Treatment of Benign Prostatic Hypertrophy by Non-operative Methods—W. E. LOWER, Cleveland.

New Surgical Measures in the Treatment of Impotence—O. S. LOWSLEY, New York.

Studies of the Testis-Anterior Pituitary Hormone Relation in a Human Being—J. F. McCAHEY, L. P. HANSEN and D. SOLOWAY, Philadelphia.

Experimental Study in Renal Arteriography—S. W. MOORE and R. B. HENLINE, New York.

A Study of the Changes in the Trigone following Resection—D. F. RUDNICK, Chicago.

The Indication for Nephropexy, with an Analysis of Results—J. B. LOWNES, Philadelphia.

Friday, June 14th—9 a.m.**SYMPOSIUM ON MALIGNANT GROWTHS OF
GENITO-URINARY ORGANS***Chairman's Address (A. M. A.):* Metastatic Carcinomatosis of the Ureter—S. R. WOODRUFF, Jersey City.

The Prognosis in Renal Neoplasm and Clinical Data Affecting It—W. F. BRAASCH, Rochester, Minn.

Teratoid Tumours of the Testes—A. L. DEAN JR., New York.

Friday, June 14th—9 a.m.—Continued

Total Cystectomy and Urethral Transplantations in Malignant Conditions of the Bladder, with the Description of a new Operative Procedure—R. M. NESBIT, Ann Arbor.

Roentgen Treatment of Malignant Tumours of the Bladder—R. S. FERGUSON, New York.

The Management of Tumours of the Kidney, including Cyst—R. M. LECOMTE, Washington, D.C.

Carcinoma of the Female Urethra—E. M. WATSON, Buffalo.

Choice of Treatment in Carcinoma of the Bladder—R. PEARSE, Toronto.

SECTION ON ORTHOPÆDIC SURGERY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION***Chairman*—ROBERT D. SCHROCK, Omaha.*Vice-Chairman*—ARTHUR T. LEGG, Boston.*Secretary*—FREMONT A. CHANDLER, Chicago.**CANADIAN MEDICAL ASSOCIATION***Chairman*—R. I. HARRIS, Toronto.*Secretary*—G. A. RAMSAY, London.**Wednesday, June 12th—9 a.m.**

Comminuted Colles Fracture in Elderly Patients—G. E. HAGGART, Boston.

Healing of the newer Bumper Fractures of the Tibia—W. G. STERN and L. E. PAPURT, Cleveland.

Acute Anterior Poliomyelitis: A Study of the 1934 Epidemic in Southern California—J. C. WILSON and P. J. WALKER, Los Angeles.

Dupuytren's Contracture—H. W. MEYERDING, Rochester, Minn.

The Treatment of Scoliosis—A. WHITMAN, New York, and W. E. BROGDEN, Canton, O.

Late Results of Treatment of Congenital Dislocation of the Hip—C. H. HEYMAN, Cleveland.

Thursday, June 13th—9 a.m.

Traumatic Flail Elbow—J. M. MURRAY, Ottawa.

Acute Septic Arthritis—G. W. ARMSTRONG, Ottawa.

Chairman's Address (C. M. A.): Fat Embolism—A Dangerous Complication of Orthopædic Operations—R. I. HARRIS, Toronto.

Experiences in Leg-lengthening—E. C. JANES, Hamilton.

Fractures of the Carpal Scaphoid—D. W. G. MURRAY, Toronto.

Post-Traumatic Acute Bone Atrophy: A Clinical Entity—F. B. GURD, Montreal.

Friday, June 14th—9 a.m.

The Conservative Operation for Bunions—E. D. MCBRIDE, Oklahoma City.

An Analysis of Living Cases of Primary Malignant Bone Tumours—W. C. CAMPBELL, Memphis.

Chairman's Address (A. M. A.): Difficulties of Diagnosis in Bone Tumours—R. D. SCHROCK, Omaha.

Osteomyelitis in Infancy—W. T. GREEN, Boston.

Growth Arrest in the Long Bones as a Result of Fractures that include the Epiphysis—E. L. COMPERE, Chicago.

The Effect of Inflammation on Epiphyses and Slipped Epiphyses—R. A. Y. JOHNSTON, London, Ont.

GASTRO-ENTEROLOGY AND PROCTOLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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CANADIAN MEDICAL ASSOCIATION

Chairman—R. H. M. HARDISTY, Montreal.
Secretary—J. K. MCGREGOR, Hamilton.

Wednesday, June 12th—2 p.m.

Intestinal Obstruction: An Experimental Study—N. B. TAYLOR and C. B. WELD, Toronto.
 Some Effects of Barbituric Acid Derivatives on Gastro-Intestinal Motility and Absorption in the Cat—N. B. DREYER, Halifax, N.S.
 Studies on Crystalline Vitamin B₁—M. G. VORHAUS, R. R. WILLIAMS and R. E. WATERMAN, New York.
 Deficiency Disease and the Small Intestine—T. T. MACKIE and R. E. POUND, New York.
 Multiple Nutritional Deficiency Disease—R. L. HADEN, Cleveland.
 Combined Forms of Ileitis and Colitis—B. B. CROHN and B. D. ROSENAK, New York.
 The Use of Chondroitin in Idiopathic Headache—L. A. CRANDALL, G. M. ROBERTS and L. D. SNORF, Chicago.
 The Value of Belladonna in Stomach Disorders—W. A. BASTEDO, New York.

Thursday, June 13th—2 p.m.

Chairman's Address (A.M.A.): The Diagnosis and Prognosis of Epithelial Tumours of the Large Bowel—W. A. FANSLER, Minneapolis.
Chairman's Address (C.M.A.): R. H. M. HARDISTY, Montreal.
 Diagnostic Criteria of Colonic Cancer—C. ROSSER, Dallas, Texas.
 Endometriosis of the Large Bowel—N. J. MACLEAN, Winnipeg.
 Behaviour of the Average Human Colon—E. L. WALSH, G. H. LAING, H. L. SIPPY and A. C. IVY, Chicago.
 Clinical Experience of the Mayo Clinic in the Treatment of Amœbiasis—P. W. BROWN, Rochester, Minn.
 Lymphogranuloma Inguinale—H. T. HAYES, H. B. BURR and J. W. HARRIS, Houston.
 Proctological Conditions in Children—F. C. YEOMANS, New York.
 Villous Papilloma of the Rectum—F. B. BOWMAN, Hamilton.

Friday, June 14th—2 p.m.

The Function of the Pyloric Sphincter—M. J. WILSON, Toronto.
 The Regulation of Gastric Acidity—C. M. WILHELMJ and F. C. HILL, Omaha.
 The Secretion of Gastric Mucin in Man—S. J. FOGELSON and R. K. ANDERSON, Chicago.
 Relation of Non-protein Nitrogen Retention to Dehydration and Hypochloræmia—J. EIMAN and W. G. KARR, Philadelphia.
 Blood Sugar Concentration and the External Secretion of the Pancreatic Gland—B. P. BABKIN, Montreal.
 Abdominal Symptomatology of Diabetic Acidosis—J. T. BEARDWOOD JR., Philadelphia.
 Oesophageal Carcinoma, with especial Reference to a Non-stenosing Variety—R. W. MATHEWS and T. G. SCHNABEL, Philadelphia.
 Some Sequelæ of Cholecystectomy—J. F. WEIR and A. M. SNELL, Rochester, Minn.

RADIOLOGY**OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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CANADIAN MEDICAL ASSOCIATION

Chairman—W. A. JONES, Kingston.
Secretary—H. H. MURPHY, Victoria.

Wednesday, June 12th—2 p.m.

Chairman's Address (C.M.A.): The Rôle of Anatomy in the Radiological Study of the Spine—W. A. JONES, Kingston.
 A Comparison of the Clinical and Cholecystographic Manifestations of Choleystic Disease—B. R. KIRK-LIN and T. W. BLAKE, Rochester, Minn.
 Prepyloric Gastric Lesions—A. C. SINGLETON, Toronto.
 A Clinical Syndrome with Radiographic Lesions in the Frontal Bone—S. MOORE, St. Louis.
 The Roentgenological Aspects of Osteomyelitis of the Skull—K. KORNBLUM and P. J. HODES, Philadelphia.
 Observations on the Radiographic Examination of the Accessory Nasal Sinuses—E. H. SHANNON, Toronto.

Thursday, June 13th—2 p.m.

Chairman's Address (A.M.A.): Some Roentgenological Studies in the Dynamics of the Thorax—J. W. PIERSON, Baltimore.
 Importance of Early Diagnosis in Bronchiectasis—J. T. FARRELL JR., Philadelphia.
 Intravenous and Retrograde Urography: A Comparative Study—R. E. CUMMING, Detroit.
 Clinical Applications of the Method for Reading with Closed Eyes—A. H. PIRIE, Montreal.
 X-Ray Diagnosis of Tumours of the Breast—M. RITVO, P. F. BUTLER and E. E. O'NEIL, Boston.
 Cancer: An Adequate Offensive Attack—E. E. SHEPLEY, Saskatoon.

Friday, June 14th—2 p.m.

X-rays in Diagnosis and Treatment of Myelogenous Neoplasms—H. P. DOUB and F. W. HARTMAN, Detroit.
 Inguinal Gland Metastases in Carcinoma of the Penis—B. S. BARRINGER, New York.
 A New Method of Orientation applicable to the Body and the Roentgen-Ray Beam—B. J. M. HARRISON, Vancouver.
 Roentgentherapy for Mediastinal Tuberculous Lymphadenitis—U. V. PORTMANN, Cleveland.
 Hodgkin's Disease: Its Relationship to Sarcoma—M. C. MORRISON, London, Ont.
 Differential Diagnosis and Treatment of Tumours in Children—G. A. ROBINSON and R. F. CARTER, New York.

MISCELLANEOUS TOPICS**Anæsthesia****OFFICERS OF SECTION****AMERICAN MEDICAL ASSOCIATION**

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CANADIAN MEDICAL ASSOCIATION

Chairman—WESLEY BOURNE, Montreal.
Secretary—W. L. MUIR, Halifax.

Wednesday, June 12th—9 a.m.

Tribrom-Ethanol—SIR FRANCIS SHIPWAY, London, Eng.

Combined Use of Tribrom-Ethanol and Cyclopropane—
P. M. WOOD, New York.

The Effects of Hypnotics and Anæsthetics on the Con-
ditioned Reflexes in Dogs—S. DWORKIN and B. B.
RAGINSKY, Montreal.

Chairman's Address: Clinical Use of Anæsthetics—J. S.
LUNDY, Rochester, Minn.

Anæsthesia for Thyrocardiac Patients—L. F. SISE,
Boston.

Electrocardiographic Changes Under Anæsthetics—C. M.
KURTZ, Madison.

Further Experimental Studies in Spinal Anæsthesia—F.
W. COITUI, New York.

History of Medicine

OFFICERS OF SECTION

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CANADIAN MEDICAL ASSOCIATION

Chairman—W. W. FRANCIS, Montreal.

Secretary—H. E. MACDERMOT, Montreal.

Thursday, June 13th—9 a.m.

Deceased Diseases—DAVID RIESMAN, Philadelphia.

Jacques Cartier (A.D. 1535) and the History of Scurvy
—L. E. PARISEAU, Montreal.

Anatomy in the Making—F. L. REICHERT, San Francisco.

Walter Henry, Army Surgeon in the Early Nineteenth
Century—W. B. HOWELL, Montreal.

Medicine in the Time of the Crusades—R. HAMMOND,
Providence.

Military Medicine

OFFICERS OF SECTION

AMERICAN MEDICAL ASSOCIATION

Chairman—ROBERT U. PATTERSON, Washington, D.C.

Secretary—HOLMAN TAYLOR, Fort Worth.

CANADIAN MEDICAL ASSOCIATION

Chairman—JOHN GUNN, Calgary.

Secretary—W. H. DELANEY, Quebec.

Friday, June 14th—9 a.m.

Peace-Time Medical Department Reserve Training—G.
W. RICE, Washington, D.C.

Facial Surgery—E. F. RISDON, Toronto.

Relationship of the Medical Officer to the Combatant
Officer—M. C. STAYER, Carlisle, Pa.

Shell Shock in the Past and Future Wars—P. R. BOLUS,
Ottawa.

The Modern Treatment of Surgical Shock—C. H. FRAZIER,
Philadelphia.

Hospital Service Department Notes

Hospitals and Recent Federal Legislation

Hospital workers have been following with close interest recent social legislation in the Dominion Parliament. Of particular concern is the Employment and Social Insurance Act, not only because it covers unemployment insurance but because it has a section providing for a national health program. At the present moment it does not seem possible to state with assurance to what extent the unemployment insurance provisions will affect our public hospitals. Aside from broad generalizations, most of the details and decisions respecting various groups of employees are being left to the Commission. To a large extent the Act is based upon the British Act, and it would appear that in the main it is the intention of the Government to cover those productive and distributive occupations which are maintained for gain and to omit administrative and service occupations, particularly those which are not operated for gain. At the present time it is specifically stated that among those not covered are professional nurses and nurses-in-training. It is not likely that maids and orderlies would be included, although the position of clerical help or of service department personnel in public hospitals is not quite clear as yet. It has been stated to us on good authority that the decision would depend to a large extent upon whether the object of the employer was that of gain or otherwise. If so, public hospitals organized upon a non-profit basis would not participate very actively. This matter will be given consideration at the meeting of the Canadian Hospital Council this autumn. As a matter of fact, unemployment among hospital personnel is exceedingly low and there would not seem to be nearly as much need for this protection for hospital employees as for industrial workers.

Of perhaps even more interest to the hospital workers is the section of this enactment dealing with national health, for undoubtedly the machinery set up will give the development of health insurance considerable impetus in this country—and that is of paramount concern to hospitals. According to Part IV of the Act, entitled National Health, it is not the proposal of the government to launch a definite plan of health insurance, as has been averred by some, but, "It shall be the duty of the commission to assemble reports, publications, information and data concerning any scheme or plan . . . of providing, on a collective or on a cooperative basis by means of insurance or otherwise, for

All communications intended for the Department of Hospital Service of the Canadian Medical Association should be addressed to Dr. Harvey Agnew, 184 College Street, Toronto.

(1) medical, dental and surgical care, including medicines, drugs, appliances, or hospitalization, or (2) compensation for loss of earnings arising out of ill health, accident or disease." The Commission is authorized to cooperate with any provincial government or municipality or any association in effecting these studies, to make available to any province or body information so assembled, and to afford technical and professional guidance in the working out of any plan. Apparently the powers of the commission will be that of a fact-finding, advisory and co-ordinating body rather than those of initiation and executive direction. One would be of the opinion that hospital organizations would have the privilege of setting before such Commission their views with respect to hospital participation in any proposed health plan.

Another enactment of general interest is "The Limitation of Hours of Work Act". This office is in receipt of a communication from the Deputy Minister of Labour, Ottawa, stating that public hospitals do *not* fall within the provisions of this Act. While hospitals are unaffected by this Federal legislation, it is of interest to note that there is now a movement to organize hospital employees into a union affiliated with officially organized labour, and that certain hospitals in Toronto have been asked to sign agreements limiting the hours of labour to specified periods and requiring day shifts for instance to start at a specified hour in the morning. If successful in Toronto it is possible that this movement may spread to other centres.

ALLERGIC REACTION OF BATHERS TO AQUATIC VEGETATION.—Teuscher has observed several cases of urticaria and asthma among bathers. One of them was an asthmatic whose disease was aggravated when he lay on the grass by the shore while his skin was wet. Some of the bathers developed severe urticaria on entering the water. Other reactions consisted of violent sneezing, bronchial catarrh, and very troublesome asthma, which in some cases induced the persons concerned to give up bathing by the shore. The asthmatic reaction in the case of one woman was so severe while swimming that she nearly drowned. Suspecting aquatic plants as the cause of the trouble, the author concentrated his attention on two varieties—a member of the Potamogeton family and *Myriophyllum spicatum*—of which there were great quantities in the neighbourhood. He applied them to abrasions of his own skin and obtained an urticarial vesicle in response to the myriophyllum. Extracts were made of the two plants in question and used in skin tests, which invariably yielded a violent reaction to myriophyllum in the patients examined, whereas there was only a feeble or negative reaction to the extract of potamogeton. Further proof of the part played by myriophyllum was found by the success with which even the most susceptible persons were desensitized in ten to fourteen days by carefully increased doses of myriophyllum extract. It transpired that the peccant plant had recently been introduced from abroad at great cost with the object of improving the fishing.—*Deut. med. Woch.*, September 7, 1934, p. 1351; Abs. in *Brit. M. J.*

Provincial Association Notes

The Fifty-fifth Annual Meeting of the Ontario Medical Association, to be Held in Conjunction with the Twenty-eighth Annual Meeting of the Manitoba Medical Association in Fort William and Port Arthur, May 28th, 29th, 30th, 31st, 1935

Preparations are completed for one of the best conventions ever arranged in the Province of Ontario, when on May 28th, 29th, 30th and 31st, the Manitoba and Ontario Medical Associations will meet in joint session at the Head of the Lakes.

The program for May 29th and 31st is being prepared by the Ontario Medical Association, while the Manitoba Medical Association is in charge of the program for May 30th.

BUSINESS SESSIONS

Tuesday, May 28th, 1935

- 10.00 a.m.—Meeting of Board of Directors.
- 11.00 a.m.—Meeting of Council.
- 12.30 p.m.—Luncheon—Speaker: The Hon. Dr. J. A. Faulkner, Minister of Health, Province of Ontario.
- 2.30 p.m.—Meeting of Council.
- 6.00 p.m.—Meeting of Nominating Committee.
- 7.15 p.m.—Dinner, followed by Round Table Conference conducted by the Committee on Inter-Relations.

Wednesday, May 29th, 1935

- 1.00 p.m.—Luncheon—Speaker: Dr. J. C. Gillie, President-Elect, Ontario Medical Association.
- Business Meeting of the Association.

Thursday, May 30th, 1935

- 1.00 p.m.—Luncheon—Speaker: President Smith, University of Manitoba.
- Business Meeting of the Association.

SCIENTIFIC SESSIONS

The following are the speakers and subjects for Wednesday, May 29th and Friday, May 31st:

- Dr. P. M. Ballantyne, Port Arthur—"The use of Kurschner's wire in the treatment of fractures of the shaft of the femur."
- Dr. F. A. Brockenshire, Windsor—"The necessity of early treatment in congenital dislocation of the hip, club feet and birth palsy" (lantern slides).
- Dr. Alan Brown, Toronto—"Functional nervous disorders in children."
- Dr. F. J. H. Campbell, London—"Treatment of the common cold."

SCIENTIFIC SESSIONS—Continued

- Dr. W. R. Campbell, Toronto—"Obesity and its treatment."
- Dr. J. B. Collip, Montreal—"Gynæcological and obstetrical applications of endocrinology."
- Dr. W. T. Connell, Kingston—"Acute encephalitis and its after-effects."
- Dr. H. A. Dixon, Toronto—"Diagnosis of syphilitic and non-syphilitic eruptions."
- Dr. J. H. Duncan, Sault Ste. Marie—"The pituitary gland and its clinical significance."
- Dr. J. Garfield Dwyer, New York—"Para-nasal sinusitis."
- Dr. Almon A. Fletcher, Toronto—"Chronic arthritis."
- Dr. Roscoe R. Graham, Toronto—"Abdominal surgical emergencies in general practice."
- Dr. Norman M. Guiou, Ottawa—"The surgery of pregnancy."
- Dr. R. I. Harris, Toronto—"The diagnosis and treatment of bone tumours."
- Dr. Warner Jones, Toronto—"Prostatic obstruction and treatment."
- Dr. W. A. Jones, Kingston—"The anatomical and radiological consideration of the intervertebral discs."
- Dr. J. C. Masson, Mayo Clinic, Rochester—"Repair of the pelvic floor."
- Dr. J. C. Meakins, Montreal—"Assessment of renal damage and functions."
- Dr. Jas. Miller, Kingston—"Some practical points in relation to breast tumours."
- Dr. J. C. McClelland, Toronto—"Nephropexy; its indications and treatment."
- Dr. B. T. McGhie, Toronto—"Schizophrenic reaction-types."
- Dr. J. K. McGregor, Hamilton—"The treatment of peritonitis."
- Dr. L. Y. McIntosh, Fort William—"Hysteria; its psychological significance."
- Dr. John Oille, Toronto—"The treatment of heart disease."
- Dr. Wilder G. Penfield, Montreal—"The mechanism and radical treatment of certain varieties of headache."
- Dr. W. P. Tew, London—"The significance of menopausal bleeding."
- Dr. P. P. Vinson, Mayo Clinic, Rochester—"Malignant diseases of the tracheo-bronchial tree."
- Dr. G. F. Watson, Kitchener—"Splenic extracts in the treatment of tuberculosis."
- Dr. Geo. S. Young, Toronto—"The elements of good case history-taking."

The following are the speakers and subjects for Thursday, May 30th:

- Dr. Lennox G. Bell, Winnipeg—"Erythraemia."
- Dr. William Boyd, Winnipeg—"The decalcifying diseases of the bone."
- Dr. Gordon Chown, Winnipeg—"Rheumatic infection of childhood."
- Dr. C. E. Corrigan, Winnipeg—"Appendectomy without relief of symptoms."
- Dr. Alexander Gibson, Winnipeg—"The mechanics of the spinal column."
- Dr. C. B. Gilmour, Winnipeg—"The gall bladder in relation to angina pectoris."
- Dr. J. A. Gunn, Winnipeg—"The gall bladder."
- Dr. A. T. Mathers, Winnipeg—"The cardiac neuroses."
- Drs. M. R. MacCharles and J. Currie McMillan, Winnipeg—"Lip and oral cancer."

- Dr. H. O. McDiarmid, Brandon—"Pituitary tumours and vision."
- Dr. Fred G. McGuinness, Winnipeg—"Intra-cranial injury in labour."
- Drs. S. C. Peterson and J. C. Hossack, Winnipeg—"Neuro-syphilis."
- Dr. D. A. Stewart, Ninette—"The community and tuberculosis."
- Dr. P. H. T. Thorlakson, Winnipeg—"Diagnosis of gastric lesions, with special reference to gastroscopic examination."

On Wednesday evening, May 29th, there will be two public meetings, running concurrently, one in Fort William and the other in Port Arthur. The speakers at these meetings are as follows:

FORT WILLIAM

- Chairman*—Dr. G. W. Rogers, Dauphin, President, Manitoba Medical Association.
- Dr. A. T. Mathers, Winnipeg—"Sane living."
- Dr. A. Grant Fleming, Montreal—"What is health insurance?"

PORT ARTHUR

- Chairman*—Dr. J. C. Gillie, Fort William, President-elect, Ontario Medical Association.
- Dr. Roscoe R. Graham, Toronto—"Cancer."
- Dr. D. A. Stewart, Ninette—"Progress of medicine in the last fifty years."

ENTERTAINMENT

Entertainment and hospitality of a very high order may be expected from our hosts and hostesses who are noted for their ability in this regard.

Medical Societies

The Calgary Medical Society

The annual meeting of the Calgary Medical Society was held on April 2, 1935. Dr. J. J. Ower, of the University Hospital, Edmonton, gave an address of much interest on the subject of "Are we all tuberculous?" The election of officers for 1935-1936 then took place. The following were elected: *President*, Dr. F. T. Campbell; *Vice-president*, Dr. A. J. Fisher; *Secretary*, Dr. H. N. Jennings; *Treasurer*, Dr. A. I. Danks; *Librarian*, Dr. G. E. Learmonth; *Executive Committee*, Drs. I. H. Brodie, R. E. Buswell and E. B. Roach. G. E. LEARMONTH

The Montreal Physiological Society

FURTHER OBSERVATIONS ON A PHOTOELECTRIC BLOOD COUNTER AND HÆMOGLOBINOMETER, by Kenneth A. Evelyn and Ronald V. Christie.—A brief review was given of progress in connection with the Photoelectric Blood Counter

and Hæmoglobinometer first described at the Joint Meeting of the Montreal and Toronto Physiological Societies in May, 1934.

The search for a suitable diluting fluid has been successfully concluded, and it has been found that there is negligible distortion of the red cells, combined with a high degree of constancy of opacity with time, when the cells are suspended in either of two media, namely (1), 3.5 per cent sodium citrate with 0.1 per cent formalin, and (2), phosphate buffer solution of pH 7.2 and tonicity equivalent to 0.9 per cent sodium chloride. The first of these media has been adopted for routine use and has proved entirely satisfactory.

The effect of variations in red cell diameter on the accuracy of the results was discussed. A new and simplified halometer for measurement of red-cell diameter was exhibited, and the method of applying the size-correction factor described. This source of error has been completely eliminated except in cases of extreme hypochromic anæmia in which the photoelectric result with the appropriate size correction appears to be too low. Further work is being carried out to improve the accuracy of the correction for size in these extreme cases.

Slides were shown to illustrate the agreement between the red cell counts obtained by the photoelectric method and by the hæmocytometer. Taking into consideration the inherent errors of microscopic hæmocytometry, these results substantiate our original claim of an accuracy of ± 5 per cent for the photoelectric method. Slides were also shown to illustrate the agreement between hæmoglobin concentrations obtained by the photoelectric method and by the van Slyke method. The agreement in this case is of the order of ± 2 per cent.

A new and more compact model of the photoelectric blood counter was exhibited, with which it is easily possible to carry out a red cell count and a hæmoglobin determination on a sample of blood in three or four minutes.

DETECTION OF MINUTE AMOUNTS OF ARSENIC IN BIOLOGICAL MATERIALS AND THEIR CLINICAL SIGNIFICANCE, by I. M. Rabinowitch.—The widespread distribution of arsenic in nature, the many means of contamination of the human body with arsenic, and conditions which may be due to chronic poisoning with small amounts of arsenic were outlined, in order to demonstrate the possible applications of a method which can readily detect and quantitatively measure extremely minute amounts of this element in biological materials. The presently available methods of detecting small amounts of arsenic were discussed, with respect to sensitivity and specificity. The method reported is, in principle, that of Marsh-Berzelius, but contains a variety of modifications which demonstrate the many conditions which may lead to failure to

detect arsenic in extremely minute amounts. With the test as described as little as 0.0001 mg. of arsenic may be readily and uniformly detected in organic matter. An important advantage of this test over all other microchemical procedures is that it lends itself to a variety of confirmatory procedures. The latter were also outlined. The significance of arsenic in blood, urine and hair of perfectly normal individuals was briefly discussed.

The Saint John Medical Society

At the regular monthly meeting of the Saint John Medical Society, Dr. R. T. Hayes was the special speaker. The subject of his paper was "Sinusitis". He reported a series of 43 cases in his own practice of maxillary sinusitis, of which 25 were unilateral, 18 bilateral. Three of these cases were complicated by asthma. A good number of the cases under discussion had as a complication a more or less severe degree of bronchiectasis. Following treatment of the sinusitis all of the cases of bronchiectasis showed improvement. Dr. Hayes stressed the point that frequently an infected antrum is the site of focal infection and the cause of disturbances elsewhere in the body. One of the most frequent symptoms noted was the presence of head pain, which is relieved when drainage is completed. Dr. Hayes recommended as the treatment of choice the Caldwell-Luc operation. In this series there were 8 children under fourteen years of age. All were operated on; 4 are now definitely well, the others are improved. Taking the total of 43 cases, the end-results showed 24 cured, 11 improved, 5 slightly improved, and the remainder of the reports are not complete.

A. STANLEY KIRKLAND

The Toronto Biochemical Society

The 35th meeting was held in the Medical Building, the University of Toronto, on February 21st. The following communications were presented.

THE RESPIRATION OF NORMAL AND FATTY LIVER SLICES AND THE EFFECT OF CHOLINE, by Mary Scott Welch, Laurence Irving and C. H. Best.—Best and Huntsman have shown that choline, fed to rats having fatty livers, reduces the liver fat to a normal level. Likewise, a diet low in choline may cause large amounts of fat to accumulate in rat livers. The effect of choline on the oxygen consumption of normal and fatty livers has been investigated in an attempt to elucidate the way in which choline reduces liver fat.

The oxygen consumption (QO_2) of normal rat livers in Ringer-Locke and glycerophosphate medium, pH 7.4, was found to be 8.54 ± 0.3 , while that of fatty livers was 5.88 ± 0.38 . The

QO_2 decreases regularly with increasing fat content. The slope of the curve for decrease in QO_2 indicates that this decrease is not directly proportional to the fat content but that other factors besides the presence of fat are involved in the reduction of the QO_2 . The QO_2 of livers of rats on a low choline, high-fat, diet was determined to be 3.98 ± 0.41 .

Feeding choline to rats with fatty livers reduces the fat content of the liver to the normal value. These livers show a QO_2 of 7.86 ± 0.76 , which is not significantly lower than the normal. Choline, added *in vitro*, increases the QO_2 of normal livers to 12.98 ± 0.42 , fatty livers (high-fat diet) to 9.34 ± 0.45 , and fatty livers (low choline, high-fat diet) to 7.34.

It is suggested that choline may be one of the factors involved in the reduction of the QO_2 with the increasing fat content in livers.

THE PROBLEM OF WATER SUPPLY IN A MARINE MAMMAL, THE SEAL, by Laurence Irving and K. C. Fisher.—A man cannot satisfy his thirst with sea water, but some marine mammals like the seal cannot obtain fresh water. It has been suggested that an exceptional ability of the seal's kidney would enable it to excrete a concentrated salt solution, and that in this way it could secure water sufficient for metabolism.

The salt concentration of the urine of eight young seals had been examined. The sodium chloride concentration ranged from 0.3 to 1.5 per cent, with an average of about 0.8 per cent. The faeces also were examined in two animals, but only 0.17 per cent of NaCl was found. These figures are typical of the salt concentration of human excretions.

The water requirement of the seal differs from that of a terrestrial mammal in that no water is needed for temperature control, since the animals live in cold water. Considering the water available in the food per 1,000 calories (herring), 100 ml. would be produced by oxidation of the hydrogen of fat and protein. The food would contain about 1000 ml. of water. No water would be needed for temperature control. About 100 ml. would be evaporated from the lungs, and about 200 ml. for faeces. The remaining 800 ml. would be available for the excretion of urine. One thousand calories from herring as food would yield 12.5 grams of salt and 50 grams of urea. As a result, the urine would contain about 1.5 per cent of salts, not an abnormal concentration for human urine. The urea concentration would be about 6 per cent, which is greater than the human kidney can excrete, but not so concentrated as the urine of cats and some other mammals.

As a result of these observations and calculations it is apparent that water and salt metabolism of the seal can be carried on with the same physiological processes which are normal in other mammals.

THE STANDARDIZATION OF DIGITALIS, by G. H. W. Lucas.—The powdered leaf of digitalis and the tincture made from the leaf are the two official preparations for use in the British Empire. Both of these must be standardized biologically since a chemical assay is impossible. Trevan's publication on the errors of the determination of toxicity did much to clarify the chaotic situation which had arisen in biological standardization methods. Based on a modification of his work, Chapman and Morrell in the Laboratories of the Department of Pensions and National Health, Ottawa, using 1920 frogs of the species *Rana pipiens*, determined a characteristic for this frog with ouabain as the standard. The curve obtained, and all details of the method, have been published and the method is now the standard in Canada. Recently it was necessary to standardize some digitalis in the Department of Pharmacology. The method of Morrell and Chapman was employed. In addition, as a check on the method, a number of samples analyzed in Ottawa and Montreal were analyzed in Toronto. The figures obtained agreed remarkably well with those reported by the other laboratories. Several minor criticisms of the method were made.

CARBOHYDRATE METABOLISM IN THE KIDNEY CORTEX, by Marion Lawson and H. Wasteneys.

G. F. MARRIAN, *Secretary*.

Special Correspondence

The Edinburgh Letter

(From our own Correspondent)

A lively controversy is at present going on in Glasgow with regard to a suggestion that homœopaths should be afforded the opportunity of treating a number of patients in one of the city fever hospitals. The question arose out of a communication received by the Corporation from the President of the British Homœopathic Congress stating that he and his colleagues were willing to demonstrate the results of their treatment of cases of scarlet fever, measles, and whooping-cough. A considerable amount of discussion has taken place in the press with regard to the request of the homœopaths and the matter was recently debated at a special meeting of the Corporation. At this meeting it was pointed out by several members that the Medical Officer of Health had reported that he saw no reason for departing from existing practice, and that he could not accept any responsibility for the introduction of an unaccustomed system of treatment to patients under his charge. In reply to a question the Town Clerk stated that in the

matter of treatment of patients in hospitals the Medical Officer was supreme, and that the Corporation could not dictate to him. The result of the meeting was that the matter was left in the hands of the Medical Officer of Health. Careful consideration will doubtless be given to the position by the Medical Officer of Health, but it is unlikely that his views will be modified as a result of the decision of the Corporation.

Scotland has recently lost two eminent medical men in the persons of Sir Leslie Mackenzie, of Edinburgh, and Professor J. J. R. Macleod, of Aberdeen. Sir Leslie Mackenzie was a graduate of Aberdeen University in Arts and Medicine. When he graduated in Arts in 1883 he was awarded the Ferguson Scholarship, which is given to the most distinguished student of philosophy in the four Scottish universities. After receiving his medical degree his first appointment was that of Medical Officer of Health for Kirkeudbright and Wigtownshire. Three years later he became Medical Officer of Health for Leith. He remained there for seven years. He then received his first appointment under the Government as Medical Inspector of the Local Government Board for Scotland. Since that time Sir Leslie had been intimately associated with public health administration in Scotland. He took special interest in the development of the School Medical Service and the Maternity and Child Welfare Services. He was also very largely responsible for the organization of the Highlands and Islands Medical Service. He was a member of the Ballantyne Commission on Housing, and he regarded his work on that Commission as the biggest thing in which he had any effective part. As an administrator he carried out his duties with tact and a quiet efficiency. He kept himself abreast of the developments in medical science, and any scheme for the advancement of public health had his wholehearted and invaluable support. In 1928 he received an invitation to Kentucky to inaugurate a medical service for the mountainous areas of that State. This service was modelled on the Highlands and Islands Scheme in Scotland. He received many honours including the degree of LL.D. of Aberdeen University. He was also an honorary graduate of the State University of Kentucky. Sir Leslie is survived by his wife, who takes a great interest in social and educational work in Scotland. She is a member of the Departmental Committee which is at present conducting an enquiry into the Health Services of Scotland.

Professor Macleod was also educated at Aberdeen University. He was a son of the Manse. After graduating he studied at Leipzig and Berlin. He was then appointed Demonstrator in Physiology in London Hospital College and Lecturer in Chemical Physiology and Pathology in the Sir Andrew Clark In-

stitute, London. He then went to the United States to occupy the Chair of Physiology in the Western University of Cleveland, Ohio. During the latter part of his stay there he discharged various important duties. He rendered valuable service in the development and improvement of gas masks, and also engaged in research work in connection with aviation and in the campaign for the preservation of food. In 1918 Professor Macleod was appointed to the Chair of Physiology in the University of Toronto. He became Associate Dean of the Faculty of Medicine there. It was while in Toronto that he met Dr. Banting, and there is no need to do more than refer here to the magnificent work accomplished by these two men in connection with the discovery of insulin. In 1928 he succeeded Professor MacWilliam as Professor of Physiology in Aberdeen. He was also physiologist to the Rowett Institute, and by his energy and his great reputation helped in no small measure to extend the influence and importance both of the University and of that Institution.

Dr. W. Kelman Macdonald, of Edinburgh, has given evidence before the House of Lords Select Committee on the Registration and Regulation of Osteopaths Bill. Dr. Macdonald is a graduate of Edinburgh University but now practises as an osteopath in the city. He was cross-examined by Lord Dawson and by Sir William Jowitt who is acting on behalf of the British Medical Association. He admitted that osteopathic treatment in the hands of an unskilled person might do grievous harm. He also stated that osteopathy was a revolution against drug-giving as a universal therapy, but otherwise it was not out to attack the medical profession. A very full report of the proceedings is being published in the *British Medical Journal*.

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The London Letter

(From our own Correspondent)

Almost simultaneously with the statement that there are at least three million people in Great Britain suffering from what are known as the psychoneuroses, to such an extent as to be in need of medical attention and treatment, a plea was published for more medical psychologists, especially in the north. It is well known that even in London the few establishments offering psychological treatment have to close their waiting list of patients from time to time. It is clear that ordinary medical training as at present carried out affords the student very little opportunity for learning any sort of practical psychology. A recent investigation has clearly shown the results of this in faulty diagnosis, for while approximately one-third of a consecutive

series of 1,000 insured persons certified as unfit for work were found to be suffering from some form of psychoneurosis, only one-fifth of these had been correctly labelled. In most instances the diagnosis was gastritis, anæmia, debility, neuritis, rheumatism, etc., and while it is possible to argue that the incapacity is present whatever may be the certified cause it is equally true that proper treatment depends upon proper diagnosis. Unemployment and the present economic situation are stated by the authorities to have produced no effect upon the physical well-being of the nation, but it is clear that while the body may be escaping for the time being the mind is not. Psychoneurosis is widespread, its diagnosis is faulty, and there are not enough trained psychologists to treat it. Such seems to be a fair reading of the present situation as revealed in recent publications.

It is less depressing to follow the progress of the scientific investigation of disease as set out in the annual report of the Medical Research Council. The detailed study of the chemical control of the nervous system, the parts played by acetylcholine and by vitamins A and B, makes a fascinating chapter in physiological and medical science. The progress made in the study of the influenza virus and the development of organized clinical research in various units make clear the different ways in which the council fosters and supports medical investigations. Of rather more unusual nature is the application of the statistical method to the road traffic problem. It has been shown as regards industry that certain workers have a proneness to accidents. Analysis of road accidents show that there is a similar "accident proneness" present among a comparatively small group of drivers who suffer from a disproportionate number of mishaps. It is outside the scope of the Council's activities to suggest how this finding can be translated into legislation, but it is a matter for congratulation that the motor car as an instrument of death and disability is at last receiving as much attention from medical authorities as less virulent microorganisms. If any disease caused the same weekly toll of mortality and morbidity the medical profession would be properly pilloried in the press. It is a neat retort to the faintly unpopular position which the doctor seems to hold in the eyes of editors that the profession should interest itself in this big social problem.

The chemical control of nerve impulse and other aspects of the study of the nervous system now proceeding at various centres has one important practical result in the remarkable results obtained in the use of "prostigmin" for myasthenia gravis. Drugs of the physostigmine series have now been used for about a score of cases of this malady, and credit must be given to Dr. Mary Walker for being the first to call attention

to the method. The search continues for a still further modified derivative which will have no unpleasant effects, will act when used orally, and will have a more prolonged action. Meanwhile, the effect of the injection of prostigmine into a myasthenic patient produces most dramatic results. An almost bed-ridden patient, unable to look upwards or raise her arms above the horizontal, was enabled to dance and to visit a theatre unaided after an injection of this drug. Thus briefly may be set on record one of the most spectacular advances in treatment since liver was introduced for pernicious anæmia.

It was complained in a recent debate in Parliament on maternal mortality that more trouble had been taken over the birth of a chimpanzee in the London Zoo than over the average poor mother. Certainly the press stories of how early visitors to the new "baby" had to wear masks caused a pang of envy among those whose daily work includes the keeping of the newly-born in maternity institutions from catching "colds". At a recent meeting of the sections of obstetrics and gynaecology of the Royal Society of Medicine an account was given of the birth of the new chimpanzee by an obstetrician who had "assisted". The final expulsion was aided by the mother's hands and she also attempted removal of the placenta in this way without any septic complications. The moral of the whole story, in so far as any political capital can be made out of it, appears to be a justification for non-interference and an assurance that mothers receive adequate nutrition during pregnancy.

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Medico-Legal

VI.

Caron v. Gagnon*

Quebec—Extension of operation for appendicitis—Removal of ovaries—Patient's consent—Surgeon's responsibility in event of absence of consent to extension of operation.

A point similar to that discussed in *Marshall v. Curry*† had already been raised in the case of *Caron v. Gagnon*, in which the judgment was rendered by the distinguished jurist, Sir François Lemieux. About the 13th of May, 1929, the Plaintiff's wife had suffered an acute attack of appendicitis, and the Defendant, a specialist in obstetrics and gynaecology, had advised an immediate operation. In the course of the operation for the removal of the appendix, the

* (1930) 68 S. C. 155.

† See this *Journal*, 1935, 32: 453.

defendant, finding a serious condition of the ovaries, removed them as well.

There was no suggestion whatever that the Defendant surgeon in this case had been at fault in the treatment of the wife's condition, that the operation had been unskilfully done, or even that it was not the proper operation in the circumstances. The Plaintiff's only allegation was that the Defendant had removed his wife's ovaries without her consent or his own, and had in consequence rendered her sterile.

The responsibility of the physician or surgeon to his patient, said Sir François Lemieux, is governed by Article 1053, which reads "Every person capable of discerning right from wrong is responsible for the damage caused by his fault to another, whether by positive act, imprudence, neglect or want of skill". Everyone, whatever be his position or profession, is subject to this general rule. In consequence the medical man is responsible, for instance, if he operates while drunk, if he omits to give the necessary directions for the administration of remedies prescribed by him, if he acts in ignorance of the elementary principles of his profession, or if he abandons a patient in the middle of a difficult and dangerous operation. But it has been decided that the doctor who acts within the purview of his profession "avec la conscience de son opinion et de la bonté de son système" incurs no responsibility, since it is impossible in the exercise of a profession to impose an indefinite responsibility which is often conjectural.

The Court considered two points. First of all, had the Plaintiff and his wife consented to the operation for the removal of the ovaries? Secondly, did the particular circumstances of the case justify or even oblige the Defendant to remove them?

On the first point, it was laid down as a principle that the medical man before treating a patient, and particularly before an operation as serious as this one, must have the consent of the patient, or of the person under whose authority the patient is. In this case there were in evidence certain remarks of the husband at the time he was informed that an operation for appendicitis must be performed, which the Court construed as a consent to any extension of the operation that might be necessary. But even supposing that a precedent consent, or a subsequent confirmation of the extension, had not been given, the Court found justification for the doctor on the second ground stated above. For the evidence showed that it is always difficult to discover an affection of the ovaries without actually opening the abdomen, and that in this particular case the Defendant had been unable by a routine examination to discover any evidence of trouble. Once the abdomen was opened, however, a condition was discovered which in ninety out of a hundred similar cases

would necessitate a second operation if not immediately remedied. The Defendant considered it his duty in the interests of the Plaintiff's wife to remove the ovaries immediately, and in a subsequent examination they were in fact found to be affected with cysts, tumours and numerous adhesions. It would be an act of temerity on the part of the Court, said the judge, to express an opinion contrary to that of competent medical men concerning the operation, its emergency and necessity. In words that are difficult to translate adequately, he continued, "Suivant la langage des auteurs, dans les cas graves d'interventions chirurgicales, il n'y a que entre eux, pour juge, que Dieu. Le médecin qui a agi d'après son savoir, sa conscience et l'honneur, a bien fait." It is not within the competence of a legal tribunal to come to judicial conclusions on subjects so complicated as whether the treatment given was suitable or not, whether another would not have been preferable, whether the operation in question was indispensable or not, whether the physician was imprudent in attempting it, skilful or otherwise in carrying it out, or whether such and such a treatment, if it had been tried, would not have been more successful. These are scientific questions to be solved by medical men and cannot give rise to legal responsibility. The belief of the Defendant that the ovaries were seriously affected, that the operation was urgent, and that it was in the interest of the patient had not been contradicted, and had been confirmed by expert testimony. The expert witnesses had also testified that the operation was carried out skilfully and after due consideration. On these grounds the action was dismissed.—G.V.V.N.

Abstracts from Current Literature

Medicine

Some Recent Advances in Cardiovascular Disease. Wilson, C., *Brit. M. J.*, 1935, 1: 93.

In a presidential address to the Kent Branch of the British Medical Association the author points out that many patients with cardiovascular disease are still being poorly treated by the medical profession—in that there is still too much restriction of liberty. The first stage of treatment in nearly all definite forms of heart disease is rest. But in the past, and to a certain extent still, the tendency is to unduly prolong the restriction of activity to the point where such life as is permitted the patient is actually not worth living. Innocent systolic murmurs are still in some instances leading to unnecessary cardiac invalidism. Patients with high blood pressure, although perhaps in danger whatever is done, are cut off from all their interests and enjoyments, with no hope of commensurate

benefit. Patients with "dilated hearts" (usually suffering only from nervous overaction of the heart) are still being kept in bed for weeks, while patients with actual heart disease are often kept in bed months, where weeks would suffice. In no other branch of medicine is liberty so constantly curtailed by professional advice as in heart disease, real or suspected. Assuming that a heart has been genuinely damaged, as by an acute inflammatory process, "inflamed hearts get well, as do inflamed tonsils". At the worst, the heart has a great reserve, and even if severely damaged may quite well be able to support the ordinary calls of life. The author has seldom regretted allowing gradual liberty to the cardiac patient to the extent that the patient could support in comfort. He advocates the more general use of modern diagnostic procedures, in particular, orthodiascopy and electrocardiography, in an effort to avoid much needless invalidism of patients.

W. FORD CONNELL

Adams-Stokes Syndrome with Transient Complete Heart Block of Vagovagal Reflex Origin. Weiss, S. and Ferris, E. B., Jr., *Arch. Int. Med.*, 1934, 54: 929.

The authors report observations on a man who suffered from fainting spells brought on by swallowing food, especially sticky food. Roentgen-ray examination revealed the presence of an oesophageal diverticulum. They devised a small rubber balloon connected with a duodenal tube to be swallowed by the patient. Under the fluoroscope it was placed at the level corresponding to the diverticulum. By inflating the balloon they were able to induce typical fainting attacks, which could be quickly relieved by deflating the balloon. Electrocardiograms taken during the attacks showed complete heart block.

The effect of various drugs including barium chloride, epinephrine, ephedrine sulphate, and atropine sulphate were studied. Paralysis of both vagi with procaine abolished the fainting attacks. From these experiments, they explain the mechanism of production of the Adams-Stokes syndrome by the induction of complete heart block, precipitated by a vagovagal reflex, the source of the reflex being irritation of the sensory endings of the vagi by the diverticulum.

LEYLAND J. ADAMS

Huge T Waves in Præcordial Leads in Cardiac Infarction. Wood, M. D. and Wolferth, C. C., *Am. Heart J.*, 1934, 9: 706.

The application of electrocardiography in the study of heart disease is gradually broadening out with the study of præcordial leads. This communication reports 7 cases exhibiting huge T waves, when the leads are taken from the chest. From a group of 78 patients with acute coronary occlusion, which have been studied with chest leads, there were only 6 in which the T

wave in lead IV or V exceeded 10 mm. in height. Most of these cases will show T waves of large amplitude in the limb leads, but in certain cases this will occur in the limb leads without being present in lead IV. In some instances these huge T waves were elicited from a small area of the præcordium only. In all the symptoms were those of coronary occlusion, and it is suggested those showing upright T waves probably had a lesion located in the anterior surface of the left ventricle. In these cases showing large inverted T waves it is conjectured that the lesion is in the posterior surface of the left ventricle.

Five hundred and fifty cases were done as a control group and in none did this phenomenon occur. It is concluded, therefore, that it would seem justifiable to regard the occurrence of huge T waves in præcordial leads as indicative of an acute or subacute disturbance of the coronary circulation.

W. H. HATFIELD

Surgery

Acute Appendicitis in Children. Stone, C. T., *Arch. Surg.*, 1935, 30: 346.

The author reviews the records of 258 patients with acute appendicitis, under fifteen years of age, at the University of Virginia Hospital between 1925 and 1932.

Difficulties in diagnosis of this disease in children may give the impression that there is a fundamental difference in the disease in children and in adults. The author has analyzed the problem with reference to incidence, bacteriology, etiology, symptomatology, subjective and objective signs, mortality, and factors influencing mortality in children, in order that such differences might be determined. He concludes that there is no essential difference. The etiology, history, and physical findings are identical for all practical purposes. The main difference is in the higher mortality rate in children. Certain factors may contribute to this. The omentum in the child hangs at a higher level than that in the adult, and is therefore less efficient in the walling off an inflammatory process in the lower portion of the abdomen, which may in part explain the lower resistance of the child to peritoneal involvement and indirectly the higher mortality.

The assumption that the thinness of the wall of the appendix in the child may permit earlier peritoneal involvement is not supported by the observations of the author. Difficulties in arriving at an early diagnosis may contribute to the mortality, by delaying operation until after the appendix has ruptured. It is often difficult to obtain a complete history in younger children. It has been generally accepted that the position of the appendix with reference to the abdominal wall determines the location of tenderness on physical examination. No evidence is offered in the present series either to

confirm or dispute this opinion. There may be tenderness along the lower border of the liver, maximal tenderness and spasm in the right flank, and tenderness or a mass on rectal examination. The supposed frequency of constipation as an accompaniment of appendicitis doubtless may contribute to the free use of cathartics. Every physician and parent should regard each case of abdominal pain as a potential case of appendicitis, which should be watched sedulously. Laxatives and sedatives should be withheld until a diagnosis is made. The greater mortality in children is undoubtedly due to the lower resistance of the child to peritoneal involvement.

G. E. LEARMONTH

Acute Pancreatitis. Koster, H. and Kasman, L. P., *Arch. Surg.*, 1934, 29: 1014.

These authors report 22 cases of acute pancreatitis, with a mortality rate of 22.7 per cent. Of these only 5 cases were positively diagnosed. The majority of the patients were under 35 years of age. This is of significance, when compared to the age incidence in general disturbances of the gallbladder or bile ducts, to which acute pancreatitis is linked clinically and etiologically. There was a relevant past history of symptoms in 63.64 per cent, which appeared in from three weeks to ten years prior to the onset of the acute pancreatitis; in the balance there was no such history. In the majority there was a sudden onset of pain in the epigastrium or right upper quadrant, or both, soon followed by vomiting. Where shock and cyanosis occurred the diagnosis was correctly made in 4 cases, and was suspected in 3 others. In only 18.2 per cent of the cases was the pancreas the only organ in which there was apparent involvement. Various pathological disturbances of the gallbladder or the bile ducts were evident in the remainder. Cholecystitis associated with cholelithiasis occurred in 54.54 per cent of the cases.

The authors advise the following steps in the surgical treatment of acute hæmorrhagic pancreatitis: (1) drainage of the biliary tract; (2) removal of the gallbladder if it is diseased or contains stones; (3) removal of calculi, if present, from the common duct; (4) mobility of the duodenum by the Kocher method, for the purpose of more accurately palpating the head of the pancreas in the search of calculi in Wirsung's duct (5) splitting of the capsule of the pancreas for the relief of œdema and drainage of the lesser peritoneal sac and the pancreas. Drainage of the biliary tract should be (1) by passing a rubber tube into the common bile-duct through the stump of the cystic duct, if the gallbladder has been removed for existing disease; (2) by passing a T-tube into the common duct if it has been opened for the removal of stones; (3) by a cholecystostomy in

the absence of disease of the gallbladder or if the pancreas is so swollen that the common duct is made inaccessible.

G. E. LEARMONTH

Obstetrics and Gynecology

Labour in the Cardiac Patient. Reis, R. A. and Frankenthal, L. E., *Am. J. Obst. & Gyn.*, 1935, 29: 44.

The incidence of organic heart disease among the mothers delivered at the Michael Reese Hospital during the last five years was 1.33 per cent; an additional 9.85 per cent had functional murmurs; 85 per cent of the cardiac patients had mitral disease of rheumatic origin. The remainder had myocardosis or congenital heart disease. In many women the cardiac pathological process of rheumatic origin is stationary rather than progressive; such patients go through repeated pregnancies with no apparent additional disturbances to the circulatory system. Since the length of labour in many cardiac patients is considerably shortened, and since many are delivered prematurely, a large percentage is able to tolerate spontaneous delivery; for the remainder a liberal use of morphine during the first stage is essential. In this latter group the second stage should be eliminated under ethylene anaesthesia. The frequency of toxæmia is increased in women with organic heart disease. The conduct of labour in the cardiac patient must be individualized. The cardiac condition demands primary consideration; the pregnancy should always be secondary. Radical obstetrics is unsafe in the presence of decompensation. Neither organic heart disease nor sterilization nor the combination should be the indication for Cæsarean section. The cardiac patient should enter labour well compensated.

ROSS MITCHELL

Eclampsia Treated by the Modified Stroganoff Method. Peckham, C. H., *Am. J. Obst. & Gyn.*, 1935, 29: 27.

The maternal mortality in 127 cases of typical eclampsia treated by the modified Stroganoff method was 11.02 per cent. This was a lower figure than previously attained at the Johns Hopkins Hospital by other forms of treatment. The maternal mortality was increased in the multiparous woman and in the older stages of the child-bearing career. A modification of Eden's classification for determining the severity of a given case is suggested. The modified Stroganoff treatment gives quite satisfactory results in the mild form of case. In severe cases it is preferable to the old forms of radical treatment, but is still followed by a high mortality, 24.27 per cent. In the latter type of case, becoming worse under conservative measures, Cæsarean section under local or spinal anaesthesia seems permissible.

ROSS MITCHELL

A New Active Principle in Ergot and its Effects on Uterine Motility. Davis, M. E., Adair, F. L., Rogers, G., Kharasch, M. S. and Legault, R. R., *Am. J. Obst. & Gyn.*, 1935, 155: 29.

A new active principle has been isolated in the non-alkaloidal fraction of ergot which is active in doses of 3 mg. when administered orally. This new active principle, when isolated, contains less than 1 in 100,000 parts of the so-called alkaloids per 3 c.c. dose; the limit of chemical analysis. The active alkaloids in ergot, ergotamine, ergotoxin and sensibamine were given to patients orally in 3 mg. doses. No uterine responses followed within an hour. When this new active principle was administered orally a good response was noted.

This new active principle was used in over 100 post-partum patients in whom kymographic tracings of uterine activity were made for a period of three or four hours. The drug evokes a characteristic response in 6 to 15 minutes after its administration, and the uterine motility persists for 3 or 4 hours. Its action is characterized by marked and persistent uterine tone and frequent uterine contractions.

The best method of biological assay for this new active principle is to insert a hydrostatic rubber bag in the human post-partum uterus and in the post-partum uterus of the dog. The new active principle is palatable, odourless, faintly yellow in colour, and is stable. It does not affect the blood pressure or provoke any undesirable reactions.

ROSS MITCHELL

Pædiatrics

Cœliac Disease (Chronic Intestinal Indigestion).

Hess, J. H. and Saphir, O., *J. Pædiatrics*, 1935, 6: 1.

The authors point out that studies of this disease based on autopsy findings are rare in the literature as compared with the clinical reports. The former publications are reviewed, and the authors report in detail 3 cases in which at autopsy broncho-pneumonia of recent development was found, also chronic enteritis, and severe changes in the pancreas. The authors feel that the chronic catarrhal inflammation of the intestinal tract was not the cause of the cœliac disease but rather the result of the changed intestinal contents and secondary infection. Changes in the pancreas consisted of slight or severe fibrosis, large islands of Langerhans, dilatation of the ducts with periductile fibrosis, and a small amount of lymphocytic infiltration throughout the organ. There was in all cases considerable regeneration of pancreatic tissue in progress, as evidenced by mitotic figures. It is suggested that this regeneration may account for the recovery of many cases.

No conclusions are drawn from this small

series, but the authors insist that every case of cœliac disease coming to autopsy should be studied by special staining methods for fibrous tissue in the pancreas.

ALAN ROSS

Chorea: Is it a Manifestation of Rheumatic Fever? Gerstley, J. R., Wile, S. A., Falstein, E. I. and Gayle, M., *J. Pædiatrics*, 1935, 6: 42.

The experience in a special clinic of 150 children suffering from chorea is reported, with 45 cases selected at random, studied intensively from social and medical points of view. Of this latter group only 6 gave a definite and 14 a questionable rheumatic history. Definite endocarditis developed in 12 cases, 11 of which had not been tonsillectomized. A large tonsillectomized group was free of endocarditis. It is felt that the removal of tonsils does not affect the incidence or severity of chorea, but does reduce the cardiac damage in patients who do develop chorea.

The authors conclude from their series that chorea may be caused by rheumatic fever, but that it is only one of many causes, such as, psychic trauma, environment, temperament, special constitution, and possibly endocrine factors. The disease occurred consistently in introverted, mentally alert children. It is suggested that these "causes" may predispose to both chorea and rheumatic fever.

In reading this paper one cannot help but wonder if the low incidence of carditis may not be explained by the supervision which these children received in the special clinic.

ALAN ROSS

Ophthalmology

Trachoma in the Indians of Western Canada.

Wall, J. J., *Brit. J. Ophthal.*, 1934, 18: 524.

The trachoma situation among the Indians of western Canada constitutes a serious problem when viewed from the economic, humanitarian and public health standpoint. The total economic loss resulting from the ravages of the disease is difficult to compute at the present time. Many Indians are in their transitional period in various parts of the west. Hunting and trapping as the sole sources of livelihood for these people have largely disappeared; houses, frequently overcrowded, and usually badly ventilated in the colder weather, have replaced the admirable tepee and tent.

The general Indian conception of the disorder is not that of a communicable disease. Many believe that the process of losing their sight is concomitant with greying hair and other manifestations of age, changes impossible to be avoided. Many cases of trachoma in their children are undoubtedly attributable to the old grandmother occupying the same house.

These old people are very strongly attached to the young children, especially the grandsons. The head-dress constantly worn by these old people is a large silk handkerchief. It serves a dual but dangerous purpose, to wipe the nose and cheeks of the child which they so frequently coddle. For this reason it is not surprising that so many cases are noted in young children.

S. HANFORD MCKEE

The Nature of the Elementary and Initial Bodies of Trachoma. Thygeson, P., *Arch. Ophthalm.*, 1934, 12: 307.

The morphology of the elementary bodies is best studied when they are in the free state. In films of the secretion from cases of subacute trachoma they appear as minute granules of uniform size, approximately 0.25 micron in average diameter. Their apparent size is somewhat exaggerated after prolonged Giemsa staining. The granules are frequently arranged in pairs, occasionally in clumps or short chains. The bodies are Gram-negative. With Giemsa's stain they are a reddish blue; they never attain the pure blue of the initial body, which remains basophilic under all ordinary conditions. Phagocytosis of the elementary bodies by both polymorphonuclear leucocytes and mononuclear phagocytes is frequently observed. The initial bodies are cocco-bacillary, of variable size, which stain blue and bipolarly with Giemsa stain. Like the elementary bodies they can be distinguished from the conjunctival bacteria by their staining reaction with aniline dyes. Neither the elementary nor the initial bodies have as yet been cultivated in artificial media. From his study the author believes that the elementary and initial bodies are stages in the life cycle of a virus which may be the etiological agent of the disease. The inclusion bodies constitute intracellular colonies of the virus in various stages of development; the elementary body should constitute the infective phase of the virus.

S. HANFORD MCKEE

Clinical and Pathological Study of Suppurative Phlebitis of the Cavernous Sinus. Ismail, H., *Ann. d'Ocul.*, 1934, 171: 814.

Phlebitis of the orbital veins and the cavernous sinus is a possible complication in the course of all infections of the face and scalp. Without denying the possibility of thrombophlebitis, Ismail states that the lesion which he has always met with is suppurating phlebitis. He has not found a case where thrombophlebitis was diagnosed and verified at autopsy. This study has been done principally to distinguish between two expressions with two entities clearly defined.

The prognosis of orbital-cavernous phlebitis is extremely grave. According to statistics the percentage of cures does not rise above 5 to 7

per cent. It is possible that the cured cases were thrombo-phlebitis.

The differential diagnosis between thrombophlebitis and suppurating phlebitis has not been established as yet. The author has tried to suggest, theoretically, symptoms which might assist in this differentiation.

The treatment must, above all, be prophylactic. A knowledge of the possibility of venous complications should help in preventing the danger of all infections of this region, particularly of the face. The treatment of the affection is palliative and symptomatic. Eagleton alone attempted surgical measures directed to the cavernous sinus. He seems to have obtained 3 cures in 24 cases treated.

S. HANFORD MCKEE

Urology

Malignant Growths in the Undescended Testis.

MacKenzie, D. W. and Ratner, M., *J. Urol.*, 1934, 32: 359.

In considering the frequency of malignant growths of the undescended testis the authors find a great variation in the published statistics. It is their opinion that they are not of more frequent occurrence than growths in the normally placed organ. This opinion is based among other things upon the fact that statistics from records of the world war show that undescended testes were found in 3.1 cases in every 1,000 men, and despite the fact that these records cover thousands upon thousands of cases, no mention is made of tumours in such cases. Finally, the entire literature contains records of only 156 cases of tumours of undescended testes.

It is thought that these growths take origin in aberrant sex cells which have the inherent quality of being able to form every other order of cell in the body. They are practically all malignant, the commonest being the embryonal carcinoma. If the testis is in the inguinal region the commonest symptom is pain, with the presence of a mass, but if it is in the abdomen there may be no symptoms until very late, when a large mass appears, or when an acute attack of pain may simulate an acute abdominal condition. These tumours metastasize very early, and it is for this that the patient may first consult the physician; thus his first complaints may be referable to the pulmonary or gastro-intestinal system, and only on complete examination is the real origin of the disease found. The treatment consists in pre- and post-operative radiation and excision. Many of these tumours are radiosensitive. Two cases are reported in detail. One was an embryoma in a small inguinal testis, recently operated upon, and the second was a seminoma weighing 700 grm. operated upon in August, 1933. In January, 1934, this patient came to

hospital complaining of pain in the right loin, loss of strength, frequency and hæmaturia. Investigation showed a mass in right upper quadrant, but failed to visualize the right renal pelvis. He is believed to have retroperitoneal metastases with probably involvement of the right kidney also. He is doing well under x-ray treatment.

N. E. BERRY

Dangers of Acidifying Salts Therapy in Urological Cases. Oppenheimer, G. D., *J. Urol.*, 1935, 33: 22.

In urological cases where renal function may be reduced the possibility of acidosis must be constantly kept in mind, and, particularly, when acidifying salts are administered. The action of ammonium chloride is explained by its decomposition into ammonia and hydrochloric acid. The ammonia is converted to urea and excreted by the kidneys, while the hydrochloric acid is neutralized in the blood at the expense of alkali; so with large doses acidosis results. The author strongly advises close observation of these cases, and that at the first provocation of acidotic symptoms complete blood chemistry readings should be made, including carbon dioxide-combining powers. The treatment advised is immediate withdrawal of the medication and large doses of soda bicarbonate by mouth or by rectum. The intravenous injection of a 5 per cent solution of glucose or bicarbonate of soda may be used to efficiently combat the acidosis. Cases are cited.

V. J. BERRY

Neurology and Psychiatry

Atopy as a Cause of Epilepsy. Forman, J., *Arch. Neurol. & Psych.*, 1934, 32: 517.

The writer defines "atopy" as that form of human allergy which is controlled by inheritance, and goes on to advance some rather convincing case material. On this evidence it would seem that a small but definite percentage of the vast group of idiopathic epileptics may be suffering from some form of specific sensitivity. The criteria of selection are rigidly laid down under four headings: (a) a familial, and (b) a personal history of any of the multifarious group of allergic reactions; (c) eosinophilia demonstrable in the blood preceding and during attacks; (d) positive skin tests for protein sensitivity.

Ten cases are described, all of which conformed to the foregoing rules, and all of which improved remarkably when the offending substances were eliminated from their surroundings. The suggestion is obvious that the possibility of an atopic etiology should be considered in all cases of idiopathic epilepsy. Further investigation along this line should prove of much interest.

G. N. PATERSON-SMYTH

Post-operative States of Excitement. Muncie, W., *Arch. Neurol. & Psych.*, 1934, 32: 681.

In a very timely article the author discusses acute psychotic reactions following surgical procedures. Probably known to Paré, the first authentic description of these is that of Dupuytren, who, in 1819, described such a condition under the name "delirium nervosum." Following the introduction of anæsthesia many cases were described. In the main the anæsthetic was not considered the causal factor, but emphasis was placed more on (1) some pre-existing mental condition becoming manifest after operation especially alcoholism; and (2) factors more directly attributable to the operation—sepsis, medication, dehydration, etc. This group gave rise to acute deliria coming on immediately after operation. Picque in the early nineties described cases less clearly related to the operative situation, at least as far as toxic factors were concerned, and running a subacute chronic course. He emphasized the importance of recognizing the type of patients likely to cause trouble. The emphasis was placed mainly on the toxic factors, and if these were not striking then a vague constitutional weakness on the part of the patient was invoked. The actual facts of the situation and the patient's reaction to it were completely neglected. At times, with the appearance, at least, of attempting to justify surgical intervention and whitewash situational at the expense of constitutional factors.

The present writer describes 4 cases in an attempt to show how many factors, exogenic, neurogenic, and psychogenic, may enter into the complicated post-operative situation. In all these the reaction resembled closely the manic phase of manic-depressive psychosis, with fear as the most striking feature in the clinical picture. In all cases the content of the patients' deliria was clearly related to elements in the immediate situation, mainly decidedly unwise attitudes on the part of physicians and nurses. In concluding, the author makes a strong plea for a closer consideration of the patients' individual characteristics, so that an atmosphere of trust and confidence may be built up, rather than the precipitation of such untoward fear reactions as are here described.

G. N. PATERSON-SMYTH

Therapeutics

The Action of Thevetin, a Cardiac Glucoside and its Clinical Application. Arnold, H. L., Middleton, W. S. and Chen, K. K., *Am. J. M. Sc.*, 1935, 189: 193.

The authors have extracted thevetin, a cardiac glucoside which has digitalis-like properties, from the nuts of *Thevetia nerifolia*, a tree indigenous to South America and the West Indies.

The drug is particularly suitable for intravenous use. Its action is more prompt and less sustained than digitalis, but otherwise similar. Its potency is one-seventh that of ouabain. The dosage of the drug, when used intravenously, is five cat units. It was given in single or repeated doses to 23 patients suffering from cardiac decompensation. In 12 of 14 patients the administration of the drug produced prompt slowing of the heart from two to forty beats per minute, the maximum effect occurring in about 45 minutes. Compensation is rapidly restored and maintained in congestive heart failure. Diuresis is more prompt than with digitalis. Electrocardiographic studies after treatment showed lengthening of the P-R interval, inversion of the T wave, deviations of the S-T segments, and alterations in the Q-R-S complexes similar to those observable after the exhibition of digitalis.

The hazards in the use of this drug are serious conduction faults. One patient in the series died suddenly a few moments after his third injection. This patient was suffering from rheumatic heart disease with auricular fibrillation. The drug apparently acts as a powerful irritant when given by the mouth or intramuscularly.

E. S. MILLS

The Treatment of Lymphœdema by Plastic Operation (Preliminary Report). Gillies, H. and Fraser, F. R., *Brit. M. J.*, 1935, 1: 96.

In view of the general lack of success which has hitherto attended any attempts at treating cases of lymphœdema by either medical, physiotherapeutic, or surgical measures, the authors' report of one successfully treated case is of considerable interest. The patient was a female of 28, with bilateral lymphœdema of four years' duration. There was no history suggesting a previous acute lymphangitis. All the more usual methods of treatment had proved quite unsuccessful.

By dye experiments the authors first demonstrated that there was a lymphatic block at the junction of trunk and limb. It was important to know if the obstruction to the lymph vessels was only in the inguinal region, that is, that the lymph vessels of the limb itself were patent. If this were so, and the existing lymphatics of the lower limb could be anastomosed with another patent set of lymphatics, draining perfectly in a normal direction, it had to be determined if such a "bridge" would drain the whole system or only afford partial relief. Accordingly, the first operation performed was an attempt to obtain this information. A graft was made of the left forearm to the left thigh; a month later, the œdema in the left leg had completely subsided. Three further operations were now performed to convert the first graft into a plastic of permanent nature. Stage by stage, the arm skin was removed from its lymphatics and was transferred to the body, so that even-

tually the lymphatics of the leg were draining into the axillary system in the infra-mammary region. The end-result was very satisfactory indeed.

The authors believe that they have proved that a lymphatic tap below the obstruction is sufficient to cure the whole limb, but feel that it is most desirable to discover some simpler "tap" than the arm-flap plastic.

W. FORD CONNELL

Clinical Observations on the Use of Prostigmin in the Treatment of Myasthenia Gravis.

Laurent, L. P. E., *Brit. M. J.*, 1935, 1: 463.

Following several communications by other workers on the same subject, the author publishes his results in the treatment of 7 cases of myasthenia gravis with prostigmin, and also with another drug of the same group. The cases cited are all typical and most had previously received many other forms of treatment without success. Following subcutaneous injection of 2 c.c. of prostigmin with atropine, gr. 1/200, most striking improvement in all the symptoms was noted within fifteen minutes or less. The beneficial effect never lasted more than about five hours, after which the patients relapsed to their former state. The mode of action of this drug and of another member of the same group which was tried with nearly equal success is still not understood. It is suggested that it will be of great value in cases of myasthenia with dyspnoea as a marked feature, or where there is dysphagia sufficient to interfere with the nutrition of the patient. Sufficient work has not yet been carried out to ascertain whether any method can safely be devised whereby the drug could be administered often enough to ensure continuous relief from symptoms.

W. FORD CONNELL

Pathology and Experimental Medicine

The Distinction between Splenic Anæmia and Subleukæmic Splenic Reticulo-endotheliosis.

Giffin, H. Z. and Watkins, C. H., *Am. J. M. Sc.*, 1934, 188: 761.

Giffin and Watkins report two cases diagnosed as subleukæmic splenic reticulo-endotheliosis. The diagnosis was based upon the finding of an increase of immature cells of reticular origin in the blood smears and in the spleens which were removed following a diagnosis of splenic anæmia. One patient was in poor health at the time the paper went to press and the second was dead. Autopsies were not obtained. The authors believe that the pre-operative or ante-mortem diagnosis of this disease can be made on the basis of the finding of primitive free reticulo-endothelial cells and a reticular type of monocyte in the circulating blood. These cells are seldom present in great numbers, but can be found by a careful microscopic study of the

blood. When present they are practically pathognomonic of the disease. The primitive cell to be sought for is generally larger than the leukocyte and usually has an eccentric nucleus which is frequently elongated but may be round or indented. The nuclear membrane is clear cut, sharp and smooth, and one or two nucleoli may be present. The chromatin is blue with Wright's stain, sharply differentiated, and arranged in fine granular strands. The cytoplasm is greyish blue, in contrast to that of the lymphocyte, and blotchy or granular in appearance. Cytoplasmic protrusions are common. This condition is akin to monocytic leukæmia, if not identical with it. The patients may present themselves with generalized involvement of the entire reticulo-endothelial system, with or without localized tumours, with predominant involvement of the bone marrow, predominant involvement of lymphatic structures, or predominant involvement of the liver or of the spleen.

Any of these forms may be frankly leukæmic (monocytic leukæmia) subleukæmic or aleukæmic. When aleukæmic they cannot be diagnosed with certainty, clinically. The clinical and morphological features which distinguish this disease from the infectious hyperplastic type of reticulo-endotheliosis and from splenic anæmia are: (1) a history of preceding episodes of infection; (2) a short history of the development of splenomegaly; (3) slight purpuric manifestations, with abnormalities of coagulation; (4) leucopenia or normal leucocyte count, with relative lymphocytosis and the presence of the primitive cells already described; (5) the presence of a reticular type of monocyte. The advanced stage of the disease is characterized by a severe macrocyte anæmia which does not respond to treatment.

E. S. MILLS

An Explanation of the Mechanism of Infantile Paralysis Production in the Human Being.

Toomey, J. A., *Ann. Int. Med.*, 1934, 8: 854.

The fundamental objection to Faber's theory of virus spread from the olfactory terminal fibres is that, in the majority of cases, paralysis first develops in the muscles that receive their nerve supply from the lumbar enlargement. The nerve plexuses in the wall of the small intestine are, like the nerve endings in the olfactory area, unmyelinated, the type that usually attracts and absorbs poliomyelitis virus. The disease has been produced experimentally by injection of the virus into regions where unmyelinated fibres are plentiful, such as into the sciatic nerve trunk, the spine, brain, eye, nose, or into the peritoneal cavity. Most attempts to reproduce the disease from the gastrointestinal tract have failed because the virus was swept out of the small intestine too soon after its introduction.

The author was able to produce poliomyelitis regularly by injecting the virus suspension through a needle into a portion of the intes-

tinal canal temporarily isolated by clamping the gut above and below, and also by injecting the suspension subserosally amongst the sympathetic nerve endings of the intestine. He suggests that the virus spreads from the gastrointestinal tract by way of the sympathetic grey fibres to the sympathetic ganglionated chain, then down to the lumbar area, where there are no white rami, and thence to the somatic nerve. In more marked involvement the spread would be up to the only other place that lacks white rami communicantes, *e.g.*, the cervical cord. Only when massive would the disease involve the thoracic and abdominal segments, where white rami exist. That the virus is arrested at the nerves where white fibre interpositions occur is a fact agreeing with clinical experience. Physiologically, the early reflex changes in clinical cases can best be explained as an early involvement of the sympathetic system.

Though the virus initiates the disease, clinical and experimental findings suggest that enteric organisms play some part in its production. Stools from patients and from monkeys ill with the disease are much more toxic when injected subcutaneously into guinea pigs than those obtained during convalescence or before the experimental production of the disease. The agglutinin titre for the colon group of organisms is depressed during the acute stage of poliomyelitis. Monkeys actively immunized against these organisms take longer to develop paralysis after injection of the virus suspension than do controls. Early in poliomyelitis there is a lymphocytic response that is typically of a typho-coli nature. A study of morbidity curves in relation to season shows that the spring and summer peak for poliomyelitis occurs about the same time as those for the spring and fall epidemics of typhoid fever. The author suggests that immunity against either the poliomyelitis virus or against the enteric group of organisms may protect against poliomyelitis.

H. GODFREY BIRD

TO HEALTH

Eldest born of powers divine!
 Bless'd Hygeia! Be it mine
 To enjoy what thou canst give,
 And henceforth with thee to live:
 For in power if pleasure be,
 Wealth or numerous progeny,
 Or in amorous embrace,
 Where no spy infests the place;
 Or in aught that Heaven bestows
 To alleviate human woes,
 When the wearied heart despairs
 Of a respite from its cares;
 These and every true delight
 Flourish only in thy sight;
 And the Sister Graces three
 Owe themselves their youth to thee;
 Without whom we may possess
 Much, but never happiness.

—Ariphron of Sicyon.

Obituaries

Dr. Robert Henry Wynyard Powell, of Ottawa, died on April 4, 1935. He was born in Toronto on February 16, 1856, the son of Grant Powell, a former Under Secretary of State for Canada, and Elizabeth Mary Hurd, and was educated privately at McGill University. In 1882 he married Elizabeth Fisher Torrance, daughter of I. A. Torrance, of Ottawa. He had six sons and one daughter, of whom three sons, Grant Powell, Ottawa; William B. Powell, Green's Farm, Conn.; and John M. Powell, of Hamilton, survive.

AN APPRECIATION

When I heard that Dr. R. W. Powell had died suddenly on the morning of Thursday, April 4th, I was shocked and saddened, but I felt what a happy ending for a man who was in his sixtieth year of the active practice of his profession.

Robert Henry Wynyard Powell was a graduate in Medicine of McGill University in the year 1876, just prior to his twenty-first birthday. He was an honour student, winner of the Holmes' Gold Medal, and his classmates were such men as Osler, Shepherd, Bell, Armstrong and others. He immediately started to practise in Ottawa, where for many years he has been one of the outstanding members of the medical profession. He was a man who always took a keen interest in his profession, and was a member of the staff of the old County Carleton Protestant Hospital, from which he resigned in 1896 to become one of the founders of St. Luke's Hospital. Dr. Powell was a strong supporter of his local medical society and was President of the Ottawa Medico-Chirurgical Society in 1884. He was President of the Canadian Medical Association in the year 1900, and it was during the early years of this century that he became interested in medical defence in regard to malpractice actions, with the result that he founded the Canadian Medical Protective Association, a mutual medical defence union at a meeting of the Canadian Medical Association at Winnipeg in 1901. This work was really his life interest, and many physicians throughout Canada have occasion to remember his kindly advice and able

assistance. He was also keenly interested in the question of one standard of qualification for practice throughout Canada, and ably assisted Sir Thomas G. Roddick, who was finally able to see the inauguration of the Medical Council of Canada in 1912. At the first meeting of the Medical Council of Canada, in November, 1912, Dr. Powell was elected Registrar, which position he held with dignity and honour until 1929, at which time his health did not permit him to continue, and he has been Honorary Registrar of this body ever since.

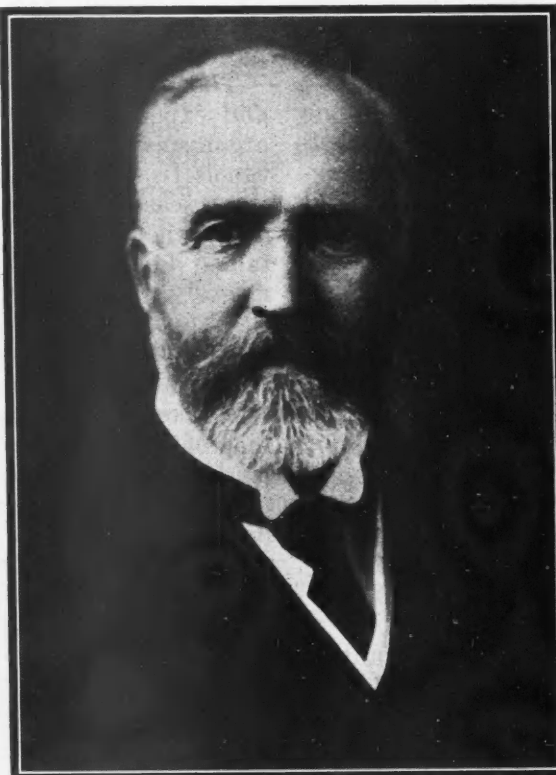
Dr. Powell was one of the early Fellows of the American College of Surgeons. He was a man who took a great interest in the affairs of life, and in his early days was a well-known cricketer. He also possessed a fine artistic taste and was a lover of fine paintings of

which he possessed many. However, it is as one who was deeply interested in all questions of medical economics that one likes to remember Dr. Powell. The fact that the examinations of the Medical Council of Canada are fast becoming the only portal of entrance to the practice of medicine in Canada is largely due to his foresight and administrative ability. In the early days of these examinations there were many points to be smoothed over, and he gave his whole heart to his work. In regard to medical defence actions no one will ever realize just how much his mature judgment has helped many a fellow-practitioner. My own sense of personal loss is very great as I have been closely associated with him for many years and I can always recall with gratitude his keen interest and well-considered advice in all things relative to his beloved profession. His passing was such as he would have desired. He was in his usual good health up to within a few minutes of his death, and one of his frequent quotations

in regard to death were in the words of the poet:—

"There is no death; what seems so is transition.
This life of mortal breath
Is but a suburb of the life Elysian,
Whose portal we call death."

J. FENTON ARGUE



Robert Henry Wynyard Powell

Dr. Walter William Boyce, of Belleville, Ont., died on March 19, 1935, in his 77th year. He was a graduate in medicine of Trinity University (1880).

Dr. George Herbert Burnham, one of the oldest practising physicians in Toronto and a well known eye specialist, died on April 15, 1935, aged eighty-four. He had practised in Toronto for fifty years, and was a graduate of Toronto University (1878). Dr. Burnham was also M.R.C.S.(Lond.) and F.R.C.S.(Edin.).

Surviving are his wife, formerly Frances S. Smith, only daughter of Hon. Sidney Smith, of Cobourg; one daughter, Marie Vivienne Burnham, Ottawa, and one son, Dr. Howard H. Burnham.

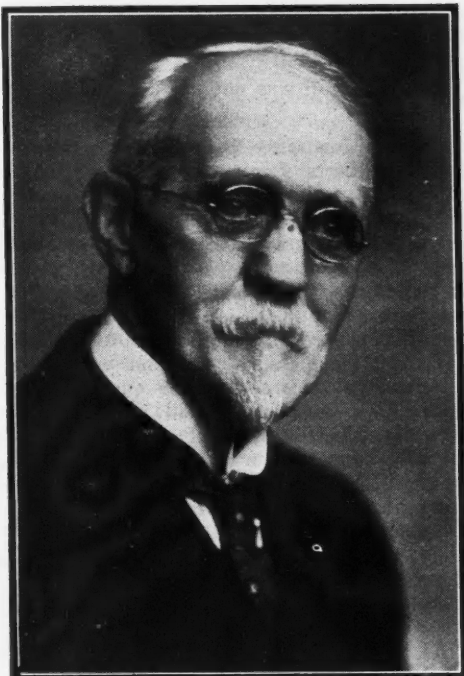
Dr. Frederick David Canfield, of Ingersoll, Ont., died on January 29, 1935. He was born in 1867 and was a graduate in medicine from Trinity University (1884).

Dr. Newton Albert Powell, an important figure in Ontario medical life during the past quarter-century, died on April 7, 1935, in his eighty-sixth year.

The late Doctor was born in Cobourg, the son of Mr. and Mrs. O. W. Powell (née Elvira Massey). At the age of 16 years he left home to participate in the suppression of the Fenian Raid. Later he was instructor in the Cobourg Battery, and, still later, in Kingston. He studied medicine at Victoria College, Cobourg; at Trinity Medical College, Toronto; and at Bellevue Hospital, New York. He held the degrees of M.B. (1875); M.D. (Univ. of New York, 1875); and M.D., C.M. (Trinity, 1888).

He first practised medicine at Edgar, Ont., where he met and married Mary A. Thomas, who predeceased him in 1925. He moved in 1886 to Toronto, where he resided until the time of his death.

At the instigation of Sir William Osler a medical library was established in Toronto, with the late Dr.



Newton Albert Powell

Powell as its first curator, and from this grew the Academy of Medicine. As one of the founders of the Academy, as a Past-president and as a Life-Fellow, Dr. Powell kept his interest in this institution until he died.

Dr. Powell was one of the founders of the Academy of Medicine, an Assistant Professor of Surgery in the University of Toronto, and widely known for his philanthropic activities. He was instrumental in the establishment of the Muskoka Cottage Sanitarium and the Shields emergency wing of the Toronto General Hospital. He was a member of the Board of the Victorian Order of Nurses and a member of St. David's Society.

Doctor Powell was fond of hunting, a member of the Red Tams of Orillia, a collector of guns and surgical instruments. He was one-time commodore of the Toronto Canoe Club, a keen naturalist and photographer. His grit and energy even in late years were illustrated in two incidents which attracted wide attention: At the age of seventy, when his pocket was picked on a street car, he jumped off the car and chased for three blocks and captured the thief. In June, 1931, at the graduation exercises at Weston Sanitarium, he fell and broke his hip, but did not reveal the fact for an hour and a half, after having made his presentation address. He spent four months in the hospital.

Surviving him are three members of his family, Mrs. Edward A. McCulloch, Toronto; Mrs. W. B. Sherk, a sister, of Peterborough; and W. E. M. Powell, a brother, of Toronto.

Dr. Albert Pollard Chown, of Oakville, Ont., died suddenly at his residence, on March 6, 1935.

Dr. Chown was the son of Edwin Chown, one of Kingston's pioneer business men, and was born in Kingston 76 years ago, one of a family of seven, six sons and one daughter. Graduating in medicine from Queen's University in 1890, he established a drug business which he conducted until eight years ago, when, on account of failing health, he went to California where he resided for six years, coming to Oakville six years ago.

At the outbreak of the war he enlisted with the Queen's University Medical Corps. Going overseas, he was appointed in charge of Canadian army medical supplies with the rank of major and was stationed at London, later in Folkestone and in Belgium.

He married Emma Louise Offord, Kingston, and last August they celebrated their golden wedding anniversary.

Surviving are his widow and three daughters, Mrs. R. J. Edmunds, Ottawa; Mrs. A. S. Williamson, Hollywood, Calif., and Miss Helen, Oakville; also one sister, Miss Alice Chown, Toronto, and two brothers, Dr. Harry Chown, Winnipeg, and S. T. Chown, barrister, Renfrew.

Dr. Robert Henry Craig, of Montreal, one of the leading nose, ear and throat specialists of that city, died suddenly from coronary thrombosis on March 23, 1935.

The late Doctor Craig was born on April 30, 1875, at Burnhamthorpe, Ont., the eldest son of the late William W. Craig and Mary Elizabeth Leuty, who moved to Montreal with their family in 1883. He was educated at Montreal High School and McGill University, from which he graduated in medicine in 1896. After a term of internship at the Royal Victoria Hospital under the late Dr. James Bell, he proceeded to London and Vienna, where he took a post-graduate course in oto-laryngology and rhinology. While in London he was assistant to Lennox Brown, the King's oto-laryngologist and one of the most famous surgeons of the day.

Returning to Montreal in 1899, he began his practice as a nose and throat specialist, setting up his office in the home of the late Dr. William Henry Drummond, his close personal friend. His reputation grew rapidly and he soon received recognition by being appointed professor at Bishop's College and specialist in the Montreal Dispensary. For many years he was on the staffs of the Montreal General and Western Hospitals and lecturer in oto-laryngology at McGill University. He was a pioneer in radical mastoid operations, bronchoscopy, and in the use of radium and magnesium in the treatment of cancer.

In 1909 Dr. Craig married Harriet Francis Have-meyer, of Yonkers, N.Y., daughter of John Craig Have-meyer. Besides his widow there survive three children, Harriet, Robert and Jean; three brothers, James P., William W. and David N., and four sisters, the Misses Jane, Mabel, and Elizabeth Craig and Mrs. Harold Rose.

Dr. James Albert Dickson, of Hamilton, Ont., died on March 21, 1935. Doctor Dickson was born in 1859 at Trenholme, Que., educated at St. Francis College, Richmond, Bishop's College, Lennoxville, and later graduated in Arts and in Medicine (1887) from McGill University. He studied in British hospitals and when he returned to Canada practised in Hamilton.

When the war broke out, Dr. Dickson volunteered and was appointed to Bramshott Camp, and later proceeded to France.

He was married in 1893 to Edith Grafton, who survives him, with two brothers, Trenholme, of Edmon-

ton; Robert, of Chicago; and two sisters, Mrs. Thomas Hood, in Texas, and Mrs. John Latham, Montreal.

Lt.-Col. Victor L. Goodwill, M.D., President of the Prince Edward Island Medical Society, died in the Prince Edward Island Hospital, Charlottetown, on February 26, 1935. Dr. Goodwill, a son of Rev. John and Mrs. Goodwill, was born in Melbourne, Australia, while his parents were proceeding to their home in Prince Edward Island, following a sojourn in the New Hebrides Mission Field. He received his early education in Charlottetown, later entering Queen's University, from which he graduated in medicine. Following a period of training in mental diseases, he received the appointment as Superintendent of the Prince Edward Island Falconwood Insane Hospital in 1900. He held this position until 1915, when he proceeded overseas as major in the Canadian Army Medical Corps. On his return in 1919 he resumed his position in Falconwood, remaining there until 1927, when he resigned and took up private practice in Charlottetown. A man quiet, unassuming, and conscientious, his passing will be mourned by a large and devoted clientèle.

He is survived by his widow, formerly Miss Florence Reid, of Kingston, Ont., and one brother, Rev. Thomas W. Goodwill, of Hillsburg, Ont.

Dr. Hugh Sinclair McDonald, of Dresden, Ont., died on March 1, 1935. He was 64 years of age. Dr. McDonald was a widely known practitioner in the northern part of Kent County. He was a graduate of Queen's University (1895).

Dr. Thomas David Meikle, of Mount Forest, Ont., died on March 15, 1935. He was born in 1857 and graduated from the Medical Faculty of Trinity University in 1883.

Dr. John Byron Moran, of Toronto, died at Trenton on January 19, 1935. He was a graduate of Trinity University (M.B., 1872).

Dr. Hugh Park, of Niagara Falls, Ont., died at Millard-Filmore Hospital, Buffalo, N.Y., on February 27, 1935, in his eighty-fourth year. He was a graduate of the University of Toronto (1875).

Dr. Arthur Piers, a native of Glace Bay, N.S., at one time a member of the Medical Faculty of Tufts Medical School, died on March 19, 1935, at the age of 62 years. He was engaged in practice in Brookline.

Dr. Walter Tremaine Purdy, of Amherst, N.S., died on March 21, 1935, in Montreal where he had gone for advice and treatment. Few were aware that he was unwell. His death, at the age of 48, removes one of Amherst's best known practitioners. He was a graduate of McGill University (1913).

Dr. Samuel Henry Quance, of Hagersville, Ont., died on March 12, 1935. He was born in 1861 and was a graduate in medicine of Trinity University (1887). He is survived by his widow, formerly Mary Jane Lyon, and one daughter, Clara L.

Dr. Lewis Edmund Shepherd, of Apsley, Ont., died on December 18, 1934. He was a graduate of Victoria University (1880).

Dr. William Trent Yeo, of Toronto, died suddenly on March 6, 1935. Doctor Yeo was born at Little Britain, Ont., the son of the late William and Charlotte Yeo, was educated at the Oakwood Grammar School and the Ottawa Normal School; taught school for a few

years, graduated from Trinity Medical School in 1897, and practised in Michigan before coming to Toronto.

Four sisters and a brother survive him: Miss N. J. Yeo, Toronto; Mrs. William Newton, Oshawa; Mrs. Thomas Wooldridge, Oakwood; Mrs. W. T. Wickett, Little Britain, and John Yeo, Weston.

News Items

Alberta

A private Bill was introduced into the Alberta Legislature, which, if passed, would have permitted a graduate from an American College of Osteopathy to become registered with the College of Physicians and Surgeons of Alberta without passing the qualifying examination. The applicant contended that the examinations set by the university were on papers prepared by medical men and were unfair to osteopaths. It was shown that other osteopaths had tried the examination and passed. The Bill was not passed.

The Health Insurance Bill is now in the Committee stage in the Alberta Legislature. There has been no material change in the Act since our last report, except that it definitely states that one of the Commissioners shall be a medical practitioner. Medical services are interpreted as are ordinarily afforded by medical practitioners registered as members of the College of Physicians and Surgeons under the Medical Act. It has been made clear that the Professional Board of Reference shall consist of three members, all of whom shall be members of the profession concerned in the question referred to the Board. The Commission will nominate the Chairman. The Health District, and the governing body of the profession concerned will each nominate a member. The people will be entitled to the following.

1. Any necessary hospitalization in a public ward.
2. Any necessary nursing services.
3. Any necessary medical and surgical attention, advice and treatment.
4. Any necessary dental attention, advice and treatment.

5. The benefit of such laboratory services as x-ray and biochemical work, and such hospital facilities as may be requisite for the purpose of diagnosis.

6. All such drugs, medical and surgical supplies and appliances as may be prescribed by the medical practitioner under whose care he is for the time being.

The professional men are to have their fees set by the Commission in consultation with the officers of the profession concerned.

The Child Welfare Act has been amended to permit the Government to assume a greater responsibility over a child who is being neglected, either because no one is responsible, or, being responsible, does not assume responsibility. The cost for the proper care is to be placed on the municipality where the child has had its domicile for a definite period.

G. E. LEARMONTH

British Columbia

At a meeting of the Executive of the British Columbia Medical Association, held on March 7th, pending legislation concerning pharmaceutical regulations, the following resolution was adopted: "That in view of the fact that heroin addiction is not a problem in British Columbia, and that in certain conditions the drug has marked advantages over the other opium alkaloids, this Executive is not in favour of its total abolition." At the same time it was

decided that a letter be sent to the provincial Government commending their action in prohibiting the sale of codein except on prescription.

In connection with the King George V Silver Jubilee Cancer Campaign the Provincial Association has chosen a special committee, under the chairmanship of Dr. J. J. Mason, to promote its aims. Two members of this committee, together with two members each of the Greater Vancouver Health League and the Health Bureau of the Vancouver Board of Trade, have been appointed to form another committee, whose personnel is composed of lay and professional members in equal number. This committee will be directly concerned with carrying out cancer education work in British Columbia, and it is hoped will form the nucleus for a future Cancer Association similar in structure and function to the Tuberculosis Association.

Although no health insurance legislation has been enacted during the last session of the Provincial Parliament, Hon. Dr. G. M. Weir, the Provincial Secretary, announced in the course of laying his public health plans before the legislature that the health insurance scheme will be inaugurated next year, and that it will form the financial base of public health services. He announced an extensive program in the latter connection, which includes as prominent features such items as a more vigorous campaign for venereal disease control and for improving public health nursing. The daily press quotes Dr. Weir as saying that this was necessary in a province where 100,000 children needed dental attention and 35,000 have tonsils which should be removed. An entirely new system of handling the problem of tuberculosis, with new legislation, is also to be introduced.

At this time also Dr. Weir gave high praise to the fine work of Dr. H. E. Young, Provincial Health Officer, who he said would go down in history as one of the great Canadian pioneers in public health work. The appointment of Dr. A. L. Crease, Director of the Provincial Mental Hospital at Essondale, as director of all mental disease administration this year was also announced.

In the following week Dr. Weir presented to the Legislature a draft bill for a health insurance scheme which will come up next session. It is planned to cover 500,000 persons in British Columbia and will cost more than \$7,000,000 annually. It will make health insurance compulsory for all wage earners or salaried employees earning less than \$200 a month. Their number is estimated at 400,000. Indigent persons and their dependents, estimated at 100,000, are also provided for. For those working on an independent basis, who earn less than \$200 monthly, health insurance will be voluntary. A free choice of medical attendant by the beneficiary under the scheme is provided for. It is proposed that half the normal scale of fees will be paid for medical services to indigent persons. Figures were presented showing that the people of British Columbia are at present receiving inadequate medical care, although many medical practitioners are idle or unpaid for the work they do. It was stated that income tax returns showed that 49 per cent of all medical practitioners in private practice in British Columbia received less than \$2,000 net income in 1933.

A number of the chiropractors in British Columbia have complained that in framing the Chiropractic Act passed last year the older established members of their profession with large and lucrative practices had set the entrance fee of \$250 and annual fee of \$75 at a height which was prohibitory to the others. Legislation to reduce these fees to \$150 and \$25 respectively was rejected by a vote of 22 to 13 in the present session, after Hon. Dr. G. M. Weir had expressed his opposition to it.

D. E. H. CLEVELAND

Manitoba

The regular meeting of the Winnipeg Medical Society was held in the Physiology Lecture Theatre of the Medical College on March 22nd. Dr. John A. Gunn presented a case of "Carcinoma of the duodenum". Dr. M. B. Perrin gave an historical presentation of "The physician of the dance of death" illustrated with lantern slides. Dr. E. S. Moorhead presented communications from the Committee on Sociology.

Dr. Lennox Bell spoke on "The red blood cells in health and disease" before the Scientific Club of Winnipeg on March 19th.

Dr. A. J. Douglas, Medical Health Officer of the City of Winnipeg, delivered the annual Gordon Bell Memorial lecture before the Winnipeg Medical Society in April.

An organization meeting of the Section of Obstetrics and Gynaecology of the Winnipeg Medical Society was held on April 4th. Dr. C. R. Rice was elected chairman of the section, Dr. J. D. MacQueen, secretary, and Dr. Ross Mitchell, councillor. It was decided to hold monthly meetings from September to May inclusive.

Dr. Stewart Musgrove, of Winnipeg, has accepted a commission in the Royal Army Medical Corps, and left to take a course in the R.A.M.C. College, Millbank, London.

Dr. A. J. Douglas, Medical Health Officer for Winnipeg, delivered the annual Gordon Bell memorial lecture under the auspices of the Winnipeg Medical Society on April 26th, in the University building on Broadway, with Dr. W. W. Musgrove presiding. The subject of Dr. Douglas' address was "The progress of public health".

ROSS MITCHELL

New Brunswick

At the annual meeting of the Council of Physicians and Surgeons of New Brunswick, Dr. A. R. Landry, Moncton, was elected *President*, and Dr. S. H. McDonald was again appointed *Registrar and Secretary*. In Dr. McDonald's report it was noted that 14 new physicians had been legally registered during the year; all had qualified by passing the examinations of the Medical Council of Canada.

On April 1st, Dr. E. C. Menzies, Medical Superintendent of the Provincial Hospital for the Insane at Saint John, announced appointments to the consulting staff as follows:—

Medicine: Drs. S. H. McDonald, H. A. Farris and A. B. Walter.

Surgery: Drs. V. D. Davidson, G. F. Skinner and J. P. McInerney.

Gynaecology: Drs. G. B. Peat, Geo. White and Jos. Tanzman.

Eye, Ear, nose and Throat: Drs. L. DeV. Chipman, R. A. Hughes and R. T. Hayes.

Anæsthetics: Dr. E. W. Lunney.

X-ray: Dr. E. A. Petrie.

Dr. Menzies also announced that up-to-date medical and surgical wards, with an operating room and a fully equipped psychiatric ward, are being established in the Provincial Hospital, which were previously lacking. It is felt, Dr. Menzies states, that the consulting staff will do much to bring to a high and modern level the treatment necessary for the 900 inmates of this Provincial Hospital.

Dr. H. A. Farris, Saint John, has returned from a short post-graduate course in Boston where he attended

the various heart clinics at the Peter Bent Brigham Hospital and elsewhere.

Dr. R. J. Caldwell, Moncton, has been appointed a coroner, to succeed Dr. A. E. Forbes.

A. S. KIRKLAND

Nova Scotia

The Report of the Inspector for Humane Institutions for the past year has been submitted. A total of 32,583 people were given treatment or custodial care. Residence in mental hospitals totalled 2,196. Accommodation in the hospitals proved adequate, except in the case of the Victoria General Hospital where there was considerable overcrowding in the public wards. The Inspector puts forward the suggestion that to relieve this overcrowding only those patients needing special forms of treatment or investigation be admitted to the Victoria General Hospital, and that more of the ordinary type be sent to local hospitals. Further comment is the following:

"An analysis of the local hospital population would lead one to believe that the number of beds is adequate to meet the immediate needs of the Province . . . It would therefore appear unwise, at this time, to press for the extension of hospital facilities in view of the fact that existing beds are not now fully occupied."

Dr. Carleton Metcalfe, of Concord, New Hampshire, who is Secretary of the State Medical Association, paid a visit to Halifax during the past month. He is associated with the Hospital at Concord, and is also Chief Surgeon of St. Paul's School.

Dr. H. G. Grant delivered the fifth lecture of the Dalhousie University Extension course at the Y.M.C.A. Building in Glace Bay on March 29th. The subject of his address was the "Conquest of disease". He pointed out that the field of preventive medicine offered the greatest opportunity for the control and eradication of disease, and further stressed that immunization against certain diseases was of the greatest importance in such control.

N. B. DREYER

Ontario

Dr. Evarts A. Graham, of Washington University, St. Louis, delivered the Balfour Lecture at the University of Toronto on Friday, April 5th. The subject was "Carcinoma of the bronchus".

Dr. C. H. Lewis, of the Ontario Hospital, Kingston, has been transferred to the Ontario Hospital, Queen Street, Toronto, as Assistant Superintendent.

Dr. G. Clare Brink, of the Provincial Department of Health, and well known as the organizer and Director of the Travelling Tuberculosis Clinics of the Department, has been promoted to the position of Director of the Division of Tuberculosis in the Ontario Department of Health. Doctor Brink will correlate the tuberculosis prevention work being carried on by the Department with that undertaken by the sanatoria throughout the province.

The Queen Alexandra Sanatorium at London has decided to build a surgical pavilion of thirty beds, as well as a new pathological laboratory. The rapid advance which is being made in the surgical treatment of pulmonary tuberculosis would seem to demand such development in all sanatoria.

The Woodstock General Hospital has recently remodelled the original building, and many improvements have been made. A children's ward is being provided and the x-ray service extended under Dr. W. M. Gilmore, who has been appointed following the retirement of Dr. J. B. Jupp.

The C.O.T.C. of the University of Western Ontario announced that amongst the medical students, 35 have qualified as lieutenants since the class of 1930.

J. H. ELLIOTT

Quebec

Twenty-five years ago the X-ray Department of the Royal Victoria Hospital, Montreal, under the direction of Dr. A. Howard Pirie, assisted by one technician, consisted of only two rooms, one for pictures and the other for treatments. Since then it has grown steadily year by year until now it has a staff of nineteen, and covers a large area in the Main Building, the Ross Pavilion, and the Urological Departments. From a total of 3,000 skiagrams taken in 1911 the number has increased over ten times, to 31,000 in 1934.

The management of the Department for X-ray Diagnosis will henceforth be in the hands of Dr. E. C. Brooks, Dr. Pirie's assistant for many years, while Dr. Pirie will act as Consultant and take charge of the Radiotherapy Department for the treatment of patients with x-rays and radium.

Dr. J. S. Baxter will be acting head of the Department of Anatomy at McGill University for the year 1935-36.

On March 31st, Montreal Jewry commemorated the memory of Moses Maimonides, physician to Saladin, philosopher, lawyer, and leader of the Jewish people in Egypt, eight centuries ago, at a meeting which took place in the Mount Royal Hotel under the auspices of the Zionist Order of Habonim.

Among the speakers were Dr. J. M. Sanchez Perez of the Spanish Consulate General; Dr. Nathan Ratnoff, New York; Louis Fitch, K.C.; Rabbi Jules Berger; and Prof. Brodie Brockwell, of McGill University.

The library of the late Dr. Robert Craig, of Montreal, is for sale. There are many books of a general character but also not a few dealing with Dr. Craig's specialty—the nose, throat and ear. Any medical men interested should write to Mrs. R. H. Craig, 1130 Sherbrooke Street West, Montreal, when a catalogue will be furnished. This is an excellent opportunity to get standard works at a very reasonable price.

Saskatchewan

Dr. Douglas Kendrick has left the Department of Health in Saskatchewan to take a four years' Fellowship at the Mayo Clinic. He did general practice at Earl Grey, then was director of the Health Unit at Gravelbourg, had a year at the School of Hygiene, when he took his Doctor of Public Health degree, and has latterly been with the Health Department in Regina.

Dr. Flora Gauld Little, with her three children, spent a few weeks in Regina on her way back to Formosa. Her husband, Dr. Lew Little and she are in charge of a hospital under the auspices of the English Presbyterian Church. The hospital has to be self-supporting; there are no tax-payers to fall back on to make up deficits, no rich people to endow it. Gretta Gauld, who graduated from the Sick Children's Hospital, Toronto, is the matron and supervises twenty-two other nurses. Japan has governed Formosa since 1895, but the people are Chinese. Diabetes presents an insoluble problem, rice is the chief article of diet; insulin is prohibitive in cost to people whose average wage is 20 cents a day; there is no charity which supplies insulin to the poor; the people who have it say, "Oh, that is a rich person's disease" and go home to die.

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CANADA



When the optometrist's bill was brought up before the laws committee of the Legislature, Dr. E. A. McCusker appeared before the committee on behalf of the physicians; he adduced the fact that most of the optometrists in the province lacked even a grade eleven education, that they knew nothing of the diseases of the eye, that they were tradesmen, that by their lack of recognition of serious eye conditions they caused people to become blind for lack of proper care. He offered to lead some of their victims up to the committee, he used the word *lead* advisedly, because if they had had a surgical operation when the glaucoma first appeared they would now be able to see. The bill was thrown out.

Saskatoon has approximately 7,800 people on relief. In 1934 the doctors of Saskatoon were paid \$5,617 for looking after patients who were on relief. For the first three months of 1935 the city has paid \$2,124 to doctors for attention to relief patients.

After being discontinued for three years the maternity grants have been restored by the provincial government. The grant is not intended for people living in a city, town or village where a physician is resident. The objective is to reduce maternal mortality. It is an interesting fact that during the three years in which no maternity grant was paid the Province of Saskatchewan enjoyed the lowest maternal mortality of its history. The average maternal mortality for the years 1931-32-33 was 4.6 per 1,000 living births. Payment is conditional on proof of medical supervision; the grant must be applied for at least two months prior to the birth of the child. The maximum grant is \$25, the amount of gratuity paid to the physician varies from \$10 to \$15.

LILLIAN A. CHASE

United States

The American Association for the Study of Goitre.

—The annual meeting of this Association will be held in Salt Lake City, Utah, June 24th, 25th, and 26th.

All information can be obtained from Dr. W. Blair Mosser, Corresponding Secretary, Kane, Pa., U.S.A.

The Harper Hospital Alumni.—The Annual Harper Hospital Alumni and Staff Dinner will take place on May 23, 1935, at the Recess Club in the Fisher Building, corner of Second and Grand Boulevards, Detroit, Mich., at 7.00 p.m., \$2.00 per plate. All former interns are cordially invited to attend. E. R. Witwer, M.D., Secretary.

General

Oto-Rhino-Laryngology.—Four international Societies concerned with Diseases of the Ear, Nose and Throat meet in Toronto shortly, starting with the American Otological Society on May 27th; the American Laryngological Society on May 30th; the Bronchoscopic Society, on June 1st, and the American Laryngological, Rhinological, and Otological Society on June 3rd to June 5th.

Mr. Norman Patterson, F.R.C.S., of the London Hospital, will be present as the Guest of Honour.

The programs are of outstanding merit, and cover the entire field of Oto-Laryngology. The meetings will be held at the Royal York Hotel, and Canadian otolaryngologists are cordially invited to attend and register as guests.

The XVth International Physiological Congress.

A considerable number of medical men and scientists from the United States will attend the Fifteenth International Physiological Congress meeting in Leningrad and Moscow, August 8th to 18th. A short, inexpensive tour, closely packed with interest, has been officially arranged. Reservations for the tour and for attendance

at the Congress may be made through World Exchange, 203 So. Dearborn Street, Chicago, Ill., or Dr. T. C. Routley, General Secretary, Canadian Medical Association, 184 College Street, Toronto, for the groups sailing on the *S.S. Laconia* July 19th and on the *S.S. Berengaria* on July 26th. Both groups will stop over in London and will have the opportunity, also, of attending there the Neurological Congress on July 29th, 30th and 31st.

A folder describing the expedition will be sent upon request. The present organization of state medicine in Russia is already a matter of world-wide interest to medical men and the tour should be a popular one. The President of the Congress is the renowned physiologist, Prof. I. P. Pavlov.

The physicians attending will be registered officially as members of the Physiological Congress and will enjoy all the privileges of such appointment. The "Intourist" has made remarkable concessions in matters of price and doctors' families may accompany them on the same terms. The scientific features of the tour will include visits to hospitals, research institutions, clinics, children's homes, and homes for workers. In addition there will be trips to museums, art galleries, theatres, and many typical new educational and cultural establishments. From Moscow the delegations will proceed south to Yalta, the heart of the Crimea, visiting several great collective farms en route. A trip by boat along the coast of the Black Sea—the Russian Riviera—will afford the opportunity of viewing some of the most scenic spots in all Europe. The return trip will take the visitors through Warsaw, Berlin, and Paris.

Due to the unusual interest shown in the Medical Tour, the Tourist and Cabin Class rates have been reduced by \$75.00. They are now as follows:

TOURS 1-A AND 1-B		
	Returning off season	Returning in season
Tourist Class	\$482.50	\$488.00
Cabin Class	600.75	608.25
TOUR 2		
Tourist Class	\$565.00	\$570.00
Cabin Class	675.00	682.50

Arrangements can be made for changes and additions to the itinerary to suit individual requirements.

The Pan-American Medical Association announces its Sixth Scientific Congress, to be held this coming summer in the form of a cruise to Brazil and the West Indies.

The party sails from New York on July 18th, returning on August 28th. The ship is the *S.S. Columbia*, the largest liner ever to cruise to South America. She offers the utmost in travel comfort and luxury, with the atmosphere of a smart beach club. Social and sports activities on board ship will be varied and delightful.

The itinerary includes Havana, Curacao, Trinidad, Santo Domingo and Jamaica in the West Indies, and Rio de Janeiro, Santos and Sao Paulo in Brazil. A comprehensive program of sightseeing may be enjoyed at all of the ports visited.

The medical activities will be divided into seventeen sections, representing all branches of medicine. The scientific program, to be conducted during the voyage on the *Columbia*, will consist of twenty-four papers to be presented before each one of these sections. The Brazilian medical profession has arranged scientific sessions at Rio de Janeiro and Sao Paulo, with special exhibits at the famous Oswaldo Cruz Institute of Tropical Medicine and at the renowned Sao Paulo University with its Instituto Sero-Therapeutic.

It is the purpose of the Congress to blend the best practical medical thought with the cultural influences of international contacts, and at the same time to provide a truly worthwhile travel experience.

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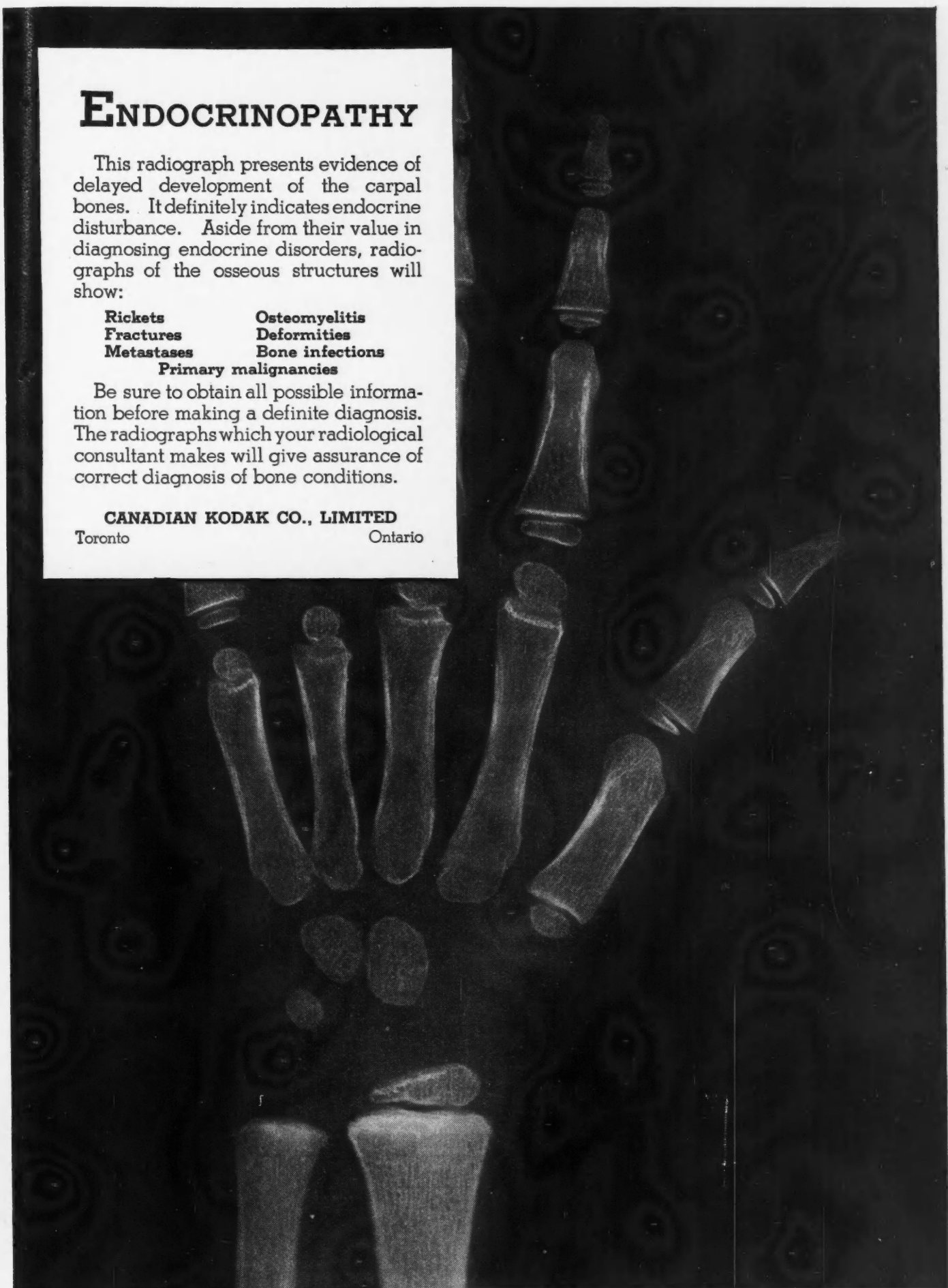
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Members of the medical profession, in good standing, are invited to join the Congress-Cruise with their wives and families. They may also invite a limited number of non-medical friends. All applications for cruise membership must be approved by the Committee on Credentials and Programs.

The most reasonable rates possible for the 41-day cruise on such a luxurious liner have been obtained.

Thos. Cook & Son—Wagons-Lits Inc. have been appointed Official Travel Agents for the Cruise, and will handle all reservations, subject to the approval of the association. Dr. Joseph Jordan Eller, 745 Fifth Avenue, New York, Director-General.

The **Third European Mental Hygiene Conference** will be held at Brussels on July 20 and 21, 1935, at the Central Mental Hygiene Clinic; 1, rue Joseph Stallaert à Ixelles.

The **Academy of Physical Medicine** will hold its Annual Meeting on June 12th and 13th, at the Claridge Hotel, Atlantic City, New Jersey. For further information address Arthur H. Ring, M.D., Secretary-Treasurer, Arlington, Mass.

The **Faculty of Medicine, University of Toronto**, purposes holding two post-graduate courses in September: In Physical Therapy—From September 16th to 21st inclusive. In Surgery, on Fractures—From September 23rd to 27th inclusive.

The fee for each course is \$25.

Applications are to be made to the Assistant Dean by September 1st. Further details will be available at a later date.

Scholarships at the "Carlo Forlanini" Institute in Rome.—The Italian Fascist National Federation against Tuberculosis places at the disposal of the International Union against Tuberculosis six scholarships at the "Carlo Forlanini" Institute in Rome.

The conditions are as follows:

These competitive scholarships, of a value of 3,000 liras respectively, plus board and lodging, are intended to enable foreign medical practitioners to stay at the "Carlo Forlanini" Institute in Rome for the purpose of following a course of studies. This stage of eight months will correspond with the academic year (from November 15th to July 15th) including the usual holiday periods. The scholars will reside at the Institute.

The scholarships will preferably be awarded to young physicians who are already familiar with tuberculosis problems and who wish to improve their knowledge of this branch of medicine.

The kind of work undertaken at the Institute will be subject to an agreement between the director of the Institute and the candidate.

The publication expenses resulting from this work may be defrayed partly or entirely by the Institute.*

The scholarships will be awarded at the summer session of the Executive Committee, which will meet on July 10th, 1935. *The names of candidates, accompanied by particulars as to their age, qualifications and professional experience, must be forwarded to the Secretariat of the Union, 66, Boulevard Saint-Michel, Paris, not later than July 1, 1935.*

No candidature will be taken into consideration unless it has been forwarded to the Executive Committee by a Government or Association belonging to the International Union.

Faculty of Medicine, Queen's University.—The post-graduate course arranged by Queen's University will take place during the week commencing September 9th instead of September 16th as previously advertised.

* For additional information see Bulletin Vol. VIII, No. 4, page 394.

Diagnosis of Cancer.—The Executive Committee of the Prussian Aerztekammern has decided to require every physician to take a course in the diagnosis of cancer during the present year.

The Medical Library Association.—The thirty-seventh annual meeting of this Association will be held in Rochester, N.Y., June 17 to 19, 1935. Sessions will be held at the Rochester Academy of Medicine and the University of Rochester Medical School. This Association consists of about 175 of the medical libraries of the United States and Canada, together with their librarians and a group of supporting members of physicians interested in the advancement of medical libraries.

The program includes addresses, round table discussions, and demonstrations on library procedure, medical history, and medical literature.

The Association is being represented by two delegates at the Congress of the International Federation of Library Associations to be held in Madrid May 19th to 30th. These delegates will return in time to report upon the Congress at this meeting.

All interested in the development of medical libraries are invited to attend.

The American Neisserian Medical Society.—All who are interested are cordially invited to attend the Annual Meeting of the American Neisserian Medical Society to be held on June 11, 1935, at the Claridge Hotel, Atlantic City, N.J. Oscar F. Cox, Jr., M.D., Secretary, 475 Commonwealth Avenue, Boston, Mass., U.S.A.

Book Reviews

Clinical Science Illustrated by Personal Experiences.

Sir Thomas Lewis, C.B.E., F.R.S., M.D., D.Sc., LL.D., F.R.C.P., Physician in Charge of Department of Clinical Research, University College Hospital, London. 189 pages, illustrated. Price 12s. net. Shaw & Sons, London, 1934.

The book reminds one to some extent of Sir James Mackenzie's "The Future of Medicine", published in 1919. In both these books is shown an impatience with loose methods of thinking and working, and a plea made for accuracy of observation and deduction.

The introduction deals with a definition of Clinical Science and its scope. Methods applied to scientific and its scope. Methods applied to scientific investigation should be applied to research in clinical medicine. The fundamental object of clinical science is the cure of disease, or the alleviation of suffering if disease be not curable. Hypothesis must be carefully checked by animal and human experiment before being accepted as fact. Sanctions for experiments are carefully and kindly defined. It is permissible to provoke symptoms under control, but it is not permissible to endanger the patients' chances of recovery or improvement, or to impose more than slight discomfort. It is permissible to withhold a remedy, to use certain patients as controls, while studying the effect of a remedy if the above rules hold.

The investigator in Clinical Science must have a free hand to explore any channel which may lead to light on his problem. Personal exploration of the fields of physiology, pathology, laboratory medicine, and animal experimentation, as they affect his problem, is a duty. The results of other workers will be accepted in view of the extent of the field, but as far as possible deduction should be based on what is known to be fact.



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That clinical science is not a new field to the author is amply illustrated by the examples of its application that form the body of the book. Twelve interesting chapters are devoted to these illustrations. None of the clinical conditions described is presented here for the first time. Previous publications have dealt with the author's work on cardiac irregularities, on capillary pulsation, on aortic incompetence, on anginal pain and coronary thrombosis, on the response of the vessels of the skin to injury, and with his investigation of the mode of action and of the effect of various remedies, but these things are well worth reviewing in the light of the methods which led to their elucidation.

The style is that of Lewis' other writings. There is the familiar line of argument used in Lewis' clinics, and the same impatience with unfounded teaching. The book is recommended to the teacher on account of the methods illustrated, to the student for the same reason, and for the inspiration it gives. The practitioner will welcome it because of actual clinical information and because its purpose is to illustrate the methods used to solve his problems.

A Handbook of Gynecology. Bethel Solomons, B.A., M.D., F.R.C.P.I., F.C.O.G., M.R.I.A.; Late Master, Rotunda Hospital, Dublin, etc. Third edition, 368 pages, illustrated. Price \$4.50. Baillière, Tindall & Cox, London; Macmillan Co., Toronto, 1934.

This is the third edition of this text book from the Dublin School, revised and slightly enlarged. In his preface the author states that the book was primarily intended for the general practitioner and the student, to supplement hospital teaching, and that it was his object to keep it as concise as possible. It can be stated at once that the author has attained his objective. The arrangement of the subject matter is simple and logical. A final chapter deals with the use of radium and x-ray in gynecology. This should be found particularly useful to the student and to many practitioners in helping them to understand the principles and results to be expected from these treatments.

The illustrations are numerous, and it seems that practically every point that could be clarified by the use of an illustration has been dealt with in this way. The mechanical make-up of the book as to type and headings is clear and concise, and numerous tables are included which should be of value to the student. In dealing with treatment the author goes into sufficient detail that the student can understand the principle involved, and many practical hints that are of value in day to day practice are also included. For example, in recommending the use of a particular drug there is added a prescription written out in full.

As is inevitable with any text book, points of view are expressed with which every individual gynecologist might not agree, but the reviewer is confident that any teacher would be willing to recommend this text book to his students. The fact that treatment is dealt with from the practical point of view means that the student can carry the text book with him and find it useful in his work.

Amoebiasis and Amoebic Dysentery. C. F. Craig, M.D., M.A., F.A.C.P., F.A.C.S., Professor of Tropical Medicine, Tulane University of Louisiana. 315 pages, illustrated. Price \$5.00. C. C. Thomas, Springfield and Baltimore, 1934.

The epidemic of amoebic dysentery which originated in Chicago in 1933 and which resulted in more than 800 cases, with a mortality rate of about 5 per cent, served one useful purpose in stimulating interest in the disease. This book which presents a complete review of modern knowledge of amoebiasis, and which is written by a recognized authority on the subject, will therefore be welcomed by internists and laboratory workers. The author stresses the fact that

amoebic dysentery is only one of the manifestations of amoebiasis. He states that "It is most unfortunate that the term 'amoebic dysentery' should have become, in the minds of most medical men, a synonym for 'amoebiasis' or 'amoebic infection', for while dysenteric symptoms are quite characteristic of the serious infections with *Entamoeba histolytica*, the vast majority of such infections are not accompanied by dysenteric symptoms but by much milder symptoms usually attributed to some other factor and not recognized as the result of infection with this parasite." As a result of analysis of figures from many different sources he concludes that between 5 and 10 per cent of people in the United States harbour the parasite, and that the importance of amoebiasis as a public health problem should receive more general recognition. The descriptions of the gross and microscopical characters of the intestinal lesions and of the morphology of the free and encysted forms of the *Entamoeba* are excellent and well illustrated. Laboratory methods of diagnosis are discussed fully, and the conclusion is reached that in active dysentery the easiest and most certain method is microscopical examination of a freshly passed stool. Staining of films after wet fixation, cultural methods, and complement fixation tests, all of which are clearly and fully explained, are valuable in special cases. In treating amoebic dysentery the author employs emetine only to control the acute dysenteric symptoms. He states that while the drug is unrivalled for this purpose it cannot be relied upon to cure amoebic infections. When symptoms have subsided he administers chiniofon by mouth and in enemas. In treating carriers, with or without symptoms, he relies upon chiniofon alone.

In conclusion it may be stated that this book offers a complete and very readable account of all that is known about amoebic infections. It is strongly recommended to readers of the *Journal*.

Practical Endocrinology. Max A. Goldzieher, M.D., Endocrinologist, Gouverneur Hospital. 326 pages, illustrated. Price \$5.00. D. Appleton-Century Co., New York and London, 1935.

This book recognizes that endocrine disorders are frequently overlooked by the general practitioner, who does not realize that some common symptoms met with in practice may have an endocrine origin. Hence the author has separate chapters on disturbances of development and growth, on obesity and leanness, on menstrual disorders, on disorders of bone formation, on overgrowth of hair, on nervous and psychic disturbances, etc. Such symptoms, so frequently encountered by the physician, are analyzed from the endocrine standpoint; suggestions are offered, once the suspicion of an underlying endocrine basis is aroused, on the procedures necessary to confirm the general diagnosis and to identify the particular gland responsible.

Short but adequate chapters on the physiology of the endocrine glands and on the examination of the patient precede the main thesis of the book. Almost a quarter of the space is devoted to treatment, which is dealt with on fairly conservative lines. Perhaps the most interesting page on treatment deals with three years' use of diiodotyrosine in exophthalmic goitre. Diiodotyrosine, from which, apparently, thyroxine is formed, and which is present in varying amount in the normal thyroid, possesses, it was thought, little physiological activity. But from recent animal experiments it is claimed that diiodotyrosine is the physiological antagonist of thyroxine, and, as such, has been used like Lugol's solution in the treatment of exophthalmic goitre; this medication, however, can be continued indefinitely without a refractory state developing, as with Lugol's solution. In spite of a rather heavy style, the book is quite readable, and should prove very useful to the general practitioner.

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Conduct and Fate of the Peripheral Segment of a Divided Nerve in the Cervical Region when United by Suture to Central Segment of Another Divided Nerve. Sir Charles Ballance, Consulting Surgeon to St. Thomas's Hospital. 45 pages, illustrated. Price 7/6 net. Macmillan & Co., London, 1934.

This book is the result of a research carried out in the laboratories of the Royal College of Surgeons, England, demonstrating that each so-called anastomosis does not eventuate in a living union of the essential elements of the two nerves. The so-called anastomosis is shown to be not in any sense an anastomosis, but only the joining together of two nerves by a suture. The experiments summed up prove that after: (1) a cervical sympathetic-hypoglossal suture the hypoglossal fibres are replaced by sympathetic fibres; (2) a hypoglossal-cervical sympathetic suture, the cervical fibres are replaced by hypoglossal fibres; (3) a superior laryngeal-cervical sympathetic suture, the cervical sympathetic fibres are replaced by superior laryngeal fibres; (4) a cervical sympathectic-superior laryngeal suture, the superior laryngeal fibres are replaced by cervical sympathetic fibres; (5) a cervical sympathetic-phrenic suture, the phrenic fibres are replaced by cervical, sympathetic fibres; (6) a phrenic-cervical sympathetic suture, the cervical sympathetic fibres are replaced by phrenic fibres; (7) a cervical-sympathetic glosso-pharyngeal suture, the glosso-pharyngeal fibres are replaced by cervical sympathetic fibres; (8) a cervical sympathetic-facial suture, the facial fibres are replaced by cervical sympathetic fibres; (9) a cervical sympathetic-recurrent laryngeal suture, the recurrent laryngeal fibres are replaced by cervical sympathetic fibres; (10) a 4th cervical nerve (anterior primary division), cervical sympathetic suture, the cervical sympathetic fibres are replaced by the 4th cervical nerve fibres.

The Medico-legal Necropsy. Symposium held at the 12th Annual Convention of American Society of Clinical Pathologists at Milwaukee, Wis., June 9, 1933. Edited for the Society by T. B. Magath. 167 pages, illustrated. Price \$2.50. Williams & Wilkins, Baltimore, 1934.

This book consists of seven papers delivered as a symposium held at the 1933 Convention of the American Society of Clinical Pathologists at Milwaukee, and which have been edited for the Society by Dr. Thomas B. Magath. The subject is surprisingly well covered in a very concise manner by the contributors, who are outstanding men in the field of medico-legal work. The introduction by Dr. Frederick E. Sondern, and the chapter on the medico-legal system of the United States by Dr. Oscar Schultz, point out clearly the weaknesses in the present system and make valuable suggestions as to means of bringing about improvements. The criticisms and suggestions contained apply with considerable force to Canada. The point at issue is that the work of the medico-legal examiner is highly responsible, highly technical and scientific, and should be viewed in that light by the authorities. The points are further stressed by a chapter on the Medico-legal Necropsy by Dr. Norris, Chief Medical Examiner of New York City. Dr. A. V. St. George contributes an excellent chapter on the performance of the autopsy, and Dr. Miloslavich, of Milwaukee, one on the anatomical findings in cases of drowning. The chapter on Toxicology by Dr. A. O. Gettler sums up in a very concise manner the principles of toxicological analysis as applied to the medico-legal autopsy, stressing the necessity for cooperation between the pathologist and the toxicological analyst. This chapter is very helpful. The last chapter by Dr. Harrison Martland, Chief Medical Examiner for Essex County, New Jersey, condenses into about 90 pages an up-to-date account of the findings in (a) death from shooting; (b) death from cutting and stabbing; and (c) death from asphyxia. This chapter is illustrated by many exceptionally clear illustrations. The book con-

cludes with an appendix giving the Report on Necropsies by a Joint Committee of the New York Academy of Medicine, the New York Pathological Society, and the Metropolitan Funeral Directors' Association. The book is a very valuable contribution to the subject of medico-legal examiner's work. It contains much more up-to-the-minute information along this line than one would expect to find in a volume of its size.

Physiology in Health and Disease. Carl J. Wiggers, M.D., Professor of Physiology, Western Reserve University School of Medicine, Cleveland. 1156 pages, illustrated. Price \$9.00. Lea & Febiger, Philadelphia, 1934.

This excellent work comes as a welcome aid to students and teachers of physiology and to medical practitioners as well. One of its most commendable features is the way in which the author has based his discussion of function upon clear statements of the physical and chemical principles involved. In view of the tremendous volume of experimental literature nowadays, the task of sorting out the essentials from the less essentials must be a colossal one. In his treatment of experimental observations Dr. Wiggers shows a fairness and clarity of exposition which make this book a particularly useful one. The references to the literature are given not only as foot notes but in lists at the endings of chapters, making the literature available to the enquiring reader. The feature of this book which makes it acceptable to the graduate and student in medicine is the discussion of the chief disturbances and abnormalities of function which is found towards the end of each sectional treatment. On reading this book one naturally examines the section upon the physiology of the heart and circulation with the expectation of finding there a particularly good treatment, in view of Dr. Wigger's original work upon the subject. This expectation is fully justified, for this section of the book is certainly excellent, though a different arrangement from that in his earlier and very valuable books upon the circulation and the pressure pulses has been adopted. The illustrations in the book are numerous, well-chosen, clearly reproduced, and of great help in connection with the text. This book will without doubt appeal to a wide circle of readers, including those engaged in research problems in experimental physiology and medicine.

The Clinical Aspects of Visceral Neurology. W. K. Livingston, M.D., Clinical Associate in Surgery, University of Oregon Medical School. 254 pages, illustrated. Price \$5.00. C. C. Thomas, Springfield and Baltimore, 1935.

This monograph consists chiefly of a review of the surgery of the sympathetic nervous system. The title raises the faint hope that significant advances have been made in the domain of the autonomic other than the peripheral sympathetic nervous system, but apart from a short anatomical and pharmacological discussion the parasympathetic system finds voice only in the usual few brief speculative paragraphs. The bulk of the book contains a practical consideration of a few of the many diseases for which sympathectomy has been advocated—functional and occlusive diseases of the blood vessels, chronic arthritis, angina pectoris, and pelvic disorders. A well-selected group of case reports is interpolated with careful and critical analysis of end-results. An important section deals with methods whereby cases may be studied before operation, and the rationale of surgical treatment. The various technical procedures for operative approach to the sympathetic nerves are outlined in simple detail. A description is added of a new extraperitoneal approach to the lumbar sympathetic chain, developed by the author, which is more direct and gives better exposure than the original Royle method. A brief discussion is included of the nature and treatment of

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certain types of intractable "visceral" pain. The author lays stress on the prominent part played by the blood vessels in the causation of most types of pain.

Both the internist and surgeon will find in this book information of value.

Text-Book of Meat Inspection, Including the Veterinary Control of Meat and Meat Products. Robert V. Ostertag, Ministerial Director and President of the Württemberg Ministry of the Interior, Stuttgart. English edition edited by T. D. Young, O.B.E., M.R.C.V.S., D.V.S.M., F.R.S.I., Veterinary Inspector for the City of London. 744 pages, illustrated. Price \$14.85. Macmillan Co., Toronto, 1934.

To give the reader an idea of the merit of the book under review, it may be said at once that Colonel Dunlop Young, himself no mean authority, refers to the book as superseding and replacing Ostertag's Handbook of Meat Inspection, which has "rightly been regarded as the standard book of reference in every part of the English-speaking world" and the author as the "greatest veterinary authority on meat inspection".

The first chapter deals with food animals, and in the second chapter, attention is directed to the importance of the careful examination of animals before slaughter and to the diseases to be looked for. As a preventive against the spread of the very highly communicable foot and mouth disease, it is recommended that the inspector, in addition to disinfecting his hands and arms, should also disinfect his clothes and boots after leaving an infected stall and before entering another one.

Abattoirs and methods of slaughter are considered in the third chapter, and it is emphasized that all meat inspection should be performed by qualified veterinary surgeons.

Chapters four and five give in great detail directions for the dissection of animals, methods of examination of the different parts of the animal, the normal condition of the individual parts, and the ways of distinguishing the meat of different food animals.

Chapters six and seven are devoted to a discussion of the physiological conditions to which meat must conform and the pathological conditions which may be found in slaughtered animals.

Chapters eight, nine and ten are given over to a brief description of the organic diseases, blood anomalies, intoxications and auto-intoxications.

It is interesting to note, in the eleventh chapter, on animal parasites, that the author has discovered in the stomach of oxen a new parasite which he called *Strongylus convolutus*. On the suggestion of Ransom, and out of compliment to the distinguished author, this parasite is now referred to in the text-books as *Ostertagia ostertagi*.

With regard to the eating of pork and sausages, Ostertag gives the lethal temperature at which trichinae have been killed, as found by five different investigators. It may be deduced from these findings that the safest practical rule for the individual is to cook the meat until all parts are of a greyish-white colour and the exuding juice is no longer red. The appearance of this colour indicates the meat has been heated to 80° C., and the lowest lethal temperature is in the vicinity of 60° C.

The author evidently considers the infective diseases caused by vegetable parasites as of maximum importance, judging from the great amount of space given them in chapter twelve. He states, at the outset, that "... he who does not think bacteriologically and act according to its principles runs the risk of committing the grossest errors in the elementary rules of meat inspection." On the much-discussed question as to the time of infection in meat poisoning, the author mentions that Uhlenhuth and Seiffert consider

that over 90 per cent of the cases are due to post-mortem infection. It is his own opinion that "in the majority of cases of human infection from meat, it may be assumed that the specified bacteria are not transmitted from the affected animals to man, but from man to man, either directly or indirectly, through meat." There is, too, a discussion of the bacteria involved in the phosphorescence and putrefaction of meat, with a full description of the latest methods for the detection of putrefaction. Special mention is made of the putrefaction of minced meat and the prevention of botulism.

The thirteenth and fourteenth chapters treat very exhaustively of the adulteration and preservation of meat. The last chapter, a short and timely one, is taken up with diseases of poultry.

The book also contains, in the form of appendices, much valuable information regarding the various Acts, Regulations and Orders governing meat inspection in the United Kingdom, in the Dominions and in the United States of America.

It is impossible, within the compass of a short review, to do justice to this splendid book. In the opinion of the reviewer it is unequalled in the English language, and can confidently be recommended to all those whose duties are in any way concerned with meat inspection. For the practical veterinarian it is indispensable.

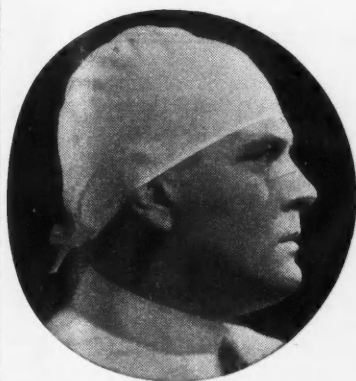
Illustrations of Regional Anatomy. E. B. Jamieson, M.D., Senior Demonstrator and Lecturer, Anatomy Department, University, Edinburgh. Section I, Central Nervous System, 48 plates; Section II, Head and Neck, 61 plates; Section III, Abdomen, 37 plates; Section IV, Pelvis, 30 plates; Section V, Thorax, 27 plates. Price \$9.00 the set (also sold separately). E. & S. Livingstone, Edinburgh; Macmillan Co., Toronto, 1934.

This series of small volumes is made up of illustrations without text, but with marginal legends giving the names of the parts, and of a size, 6 x 8 inches, uniform with most of the students' note books as used in Edinburgh. They represent the blackboard diagrams used by Dr. Jamieson in his lectures; some are of dissections, more represent sections and others are diagrammatic. Each section is provided with an attractive loose-leaf binding of its own. The terminology is that of the Anatomical Society of Great Britain, but where there are radical differences that of the B.N.A. is inserted as well.

These volumes should prove of great service to students and post-graduate students in medicine, and the physician in practice should find them equally valuable. The use of colour printing adds to the clearness of the more complicated plates. There are doubtless many teachers of anatomy who will derive many suggestions from the series. We highly recommend them for reference or for study and review.

Applied Anatomy. Gwilym G. Davis. Ninth edition completely revised by George P. Muller. 686 pages, illustrated. Price \$10.00. J. B. Lippincott, Philadelphia, London and Montreal.

The primary object of this well known work is, as stated in the preface, the correlation of the facts of human anatomy with the principles and practice of surgery. Successful diagnosis and treatment must rest upon a clear comprehension of this relationship. For the ninth edition the book has been completely revised, and it would seem to us that those responsible for the revision have successfully preserved the ideas of the original author. The result is a work on applied anatomy in line with modern teaching, which should provide students and practitioners with a foundation on which to build their knowledge of surgery. Since the general plan of the work is so good it is all the more to be regretted that there are certain omissions and errors. In the section upon the hand, for example, we



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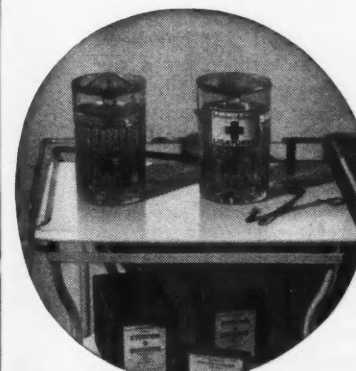
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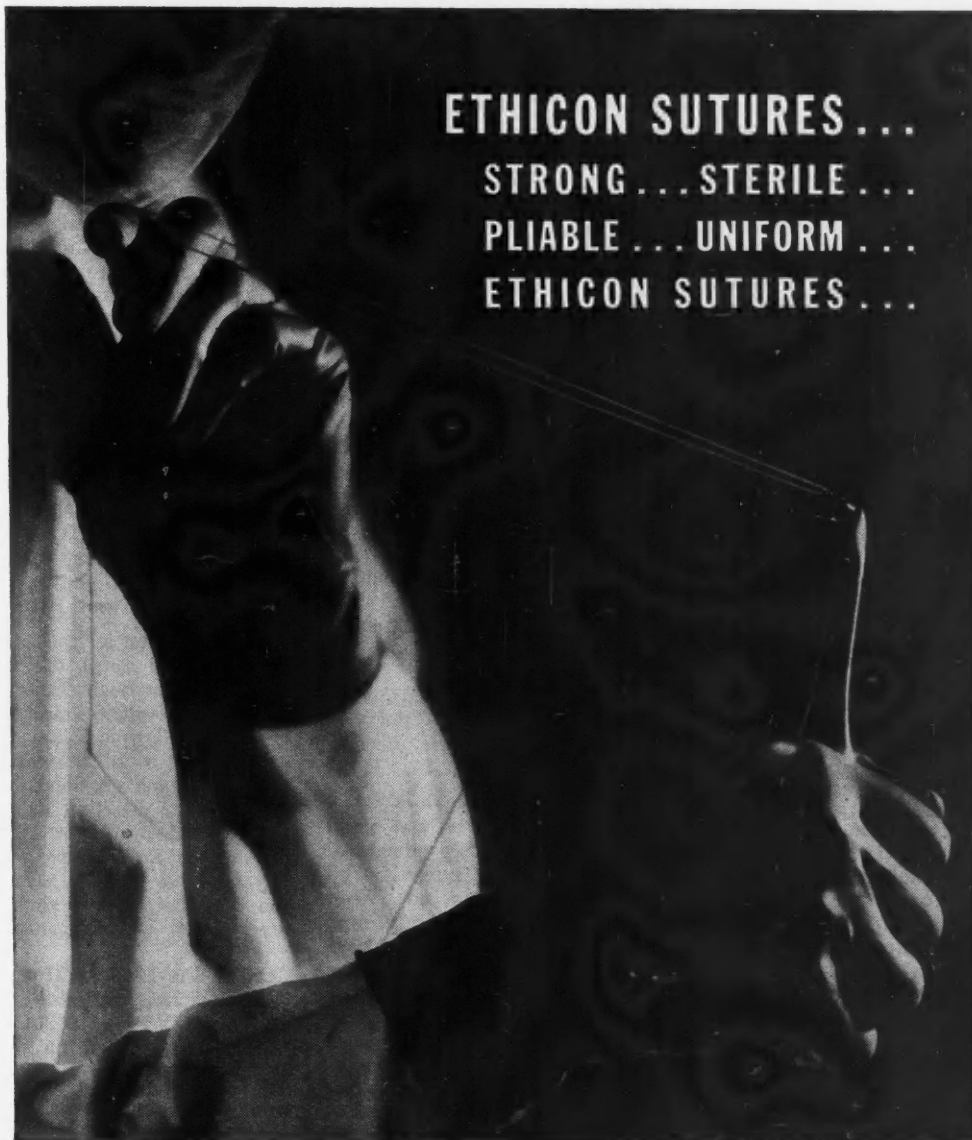
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find no mention of the palmar fascial spaces and their relation to infections in this area. There are a number of errors in the spelling of anatomical names. On page 562 a description of the technique of lumbar puncture is found in the section on cordotomy, having been transferred there from the previous page. Errors of this kind make one wish that there had been a keener scrutiny of the text as they mar, in the reviewer's opinion, an otherwise valuable production.

Synopsis of Surgical Anatomy. Alexander L. McGregor, M.Ch., F.R.C.S., Lecturer on Surgical Anatomy, University of the Witwatersrand. Second edition, 644 pages, illustrated. Price \$5.25. John Wright & Sons, Bristol; Macmillan Co., Toronto, 1934.

The writer has taken an opportunity to add a certain amount of material, especially on palmar incisions, and has made rearrangements. The book has already received its due of well-earned praise, particularly from those who teach anatomy and surgery. The present edition strengthens its place amongst anatomical manuals.

Microbiology and Elementary Pathology. Charles G. Sinclair, B.S., M.D., Chief of Laboratory Service, Tripler General Hospital, Honolulu, T. H. Second edition, 377 pages, illustrated. Price \$2.75. F. A. Davis Co., Philadelphia, 1934.

The second edition of this book will be welcomed by those who are interested in the teaching of microbiology and pathology to the student nurse. The arrangement of the subject matter has not been changed except for the addition of an entirely new chapter on pathological chemistry. Important advances in the medical literature during the past three years have been incorporated without disturbing the former sequence of subjects. The material is presented in a practical manner, with particular emphasis on those aspects which should prove of most value to the nurse in her professional career. No great detail is attempted, but a broader treatment of the subjects is given here than in most of the previous books designed for the student nurse.

Treatment by Diet. Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P., Department of Medicine, Northwestern University. 615 pages. Price \$5.50. J. B. Lippincott, Philadelphia, London and Montreal, 1934.

This book is what it purports to be. In brief, but clear form, it gives the principles and details of the dietary treatment of a variety of disorders. The conditions include diseases in which diet is of *paramount* importance—diabetes, gout, obesity, under-nutrition and nephritis. Pernicious anaemia, peptic ulcer, constipation and the well-recognized "deficiency" diseases are other conditions dealt with. Amongst conditions for which diet is of *varying* importance, treatment is outlined for disturbances of circulation, febrile disorders, diseases of the gastro-intestinal tract and biliary passages, and of the urinary tract; skin lesions, arthritis; pregnancy, and dental caries. There are also menus for the ketogenic diet. In each case, details are preceded by a brief note apropos of the nature of the disease and objects of treatment. The menus are practical. Food measures are described in terms of cups, teaspoons, tablespoons, etc., instead of more exact, but less practical, measures—grams, cubic centimetres, etc. Lengthy accounts of the theoretical aspects of dietetic treatment of disease are purposely omitted. The bibliography, however, includes a good number of references for those specially interested in this phase of the science of therapeutics.

The author is, apparently, not, as yet, convinced as to the harmful effects of high fat diets in the

treatment of diabetes. In the appendix it is noted that he also still adheres to the old classification of fruits and vegetables with respect to carbohydrate content. Utilizable carbohydrates are not differentiated from the non-utilizable forms. For example, apples, cherries, and apricots are still regarded as 15 per cent fruits, in spite of the fact, fairly well established by newer analyses, that the amounts of utilizable carbohydrates, so far as man is concerned, are less than 10 per cent; and such fruits as strawberries, which have been found to contain less than 5 per cent of utilizable carbohydrates, are still listed in the 10 per cent group.

The busy practitioner will find this book a welcome addition to his library.

The Practice of Dietetics. L. H. Newburgh, M.D., Professor of Clinical Investigation, and Frances Mackinnon, A.B., Dietitian, Diet Therapy Clinic, University Hospital, University of Michigan, Ann Arbor. 264 pages. Price \$4.75. Macmillan Co., New York and Toronto, 1934.

In this book, the authors deal largely with facts which should form the basis of dietetic treatment of disease. The basic facts of food structure and energy are clearly, but concisely, dealt with. The authors, as they state, do not follow the common practice of making a catalogue of diseases and of attaching a collection of menus to each of them, but aim at the presentation of methods for deciding whether, and how, disease may be ameliorated by diet. However, long and controversial discussions are avoided, as the book is meant for the physician in general practice, the medical student, and the dietitian, rather than as a reference work for the investigator of nutritional problems.

Diet in the Modern Hospital. Juliet de Key Whitsed, Dietitian, General Hospital, Johannesburg. 220 pages. Price \$1.50. Baillière, Tindall and Cox, London; Macmillan Co., Toronto, 1934.

This book is a series of lectures given to probationers at Johannesburg Hospital, S.A. Diets suitable for every type of medical or surgical condition are given; first, the general principles, then the food values in grams of protein, fat and carbohydrate with their total caloric value, followed by a day's specimen diet. Theory is given a minimum of space; much information is given in concise form. The food values are given for one ounce rather than for 100 grams, as is usual in this country.

We read, "The modern tendency in treatment (of diabetes) is to disregard the presence of sugar so long as acetone is absent". The modern tendency where? Surely not in a reputable clinic. If that is the modern tendency then the modern tendency is wrong. The well-cared-for diabetic aims to have every test in the day sugar-free. Much attention is given to the preparation of liver for eating. Since liver extract can be given so easily and so cheaply by hypodermic it does not seem necessary now to bother too much with cooking it.

Under "Diet in Arthritis" we read "It has been suggested that the condition may be caused by a deficiency which will be helped by pig gut. The gut must be thoroughly cleansed, washed and blanched by being placed in cold water, brought to the boil and the water thrown away. The gut must have long steaming, 12-18 hours; if tender, it may be minced, mixed with fresh tomato and served." This is a new idea, not expensive, and worth trying, if only for the novelty, because looking for something new makes life interesting for the dietitian.

This is a practical book on diet for pupil nurses. It should also be a ready reference book for the busy general practitioner to whom the compilation of diets is always difficult.

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System of Diet Writing. William S. Collens, B.S., M.D., Chief of Diabetic Clinic, Israel Zion Hospital. Price \$5.00. Form Publishing Co., New York, 1934.

An attempt has been made in this book to condense the subject of diet in such everyday problems of diabetes, nephrosis, epilepsy, obesity, etc. There is an ingenious arrangement for calculating diets according to individual needs rather than relying entirely on set combinations. By this arrangement it is possible to work out a very extensive list of diets; indeed there are 1,800 varieties of these. Information is given as to different types of diets, and there are also a number of blank menu prescription forms to be given to patients. Altogether the book is extremely practical and compact.

The Autonomic Diseases on the Rheumatic Syndrome. T. M. Rivers, M.D. 290 pages with index. Price \$3.00. Dorrance & Co. Inc., Philadelphia, 1934.

The most interesting feature of this book is its fertility of imagination. In Part I of the book the author discusses the autonomic nerves and particularly their action upon fibrous and elastic tissues. As a result of the changes which occur in these tissues under the influence of the autonomic nerves the blood supply of any given tissue is controlled. On this basis literally scores of disease, from the common cold to epilepsy, are readily explained by Dr. Rivers. All these diseases are supposed to be linked up with the rheumatic syndrome by virtue of what might be termed their autonomic "modus operandi" (amines?). For instance, rheumatoid arthritis is said to be due to toxins acting upon the autonomic nerves to the joints or other tissues, causing swelling of the fibrous tissues but not affecting the elastic fibrils which choke the former. The venous return is in turn choked by the constricting action of the elastic fibrils, and the altered blood supply thus produced explains the changes within the joints and other tissues in the disease. The author's rather bizarre ideas are in most cases hardly in keeping with present day histopathological concepts.

Human Sterility. Samuel R. Meaker, M.D., Professor of Gynecology, Boston University School of Medicine. 276 pages; illustrated. Price \$4.00. Williams & Wilkins, Baltimore, 1934.

This book embodies the results of a group study of this important and, heretofore, not too scientifically treated branch of medicine, by a gynecologist, an internist, an endocrinologist and a urologist. In the section on causation the author avoids speaking of a definite cause and prefers the term causative factors of infertility, often multiple and present in both husband and wife. Both parties to the infertile union are studied primarily as a general medical problem by an internist and an endocrinologist. That completed, the urologist specifically studies the male, and the gynecologist, the female. Finally, the group collaborate on the case. The findings may disclose relative causative factors in the domain of internal medicine, suggestive endocrine disturbances, as well as local disabilities. It is only by this thorough study that a scientific diagnosis can be made. The author stresses the need of an expert urologist who has devoted intensive study to the problem. In the gynecological diagnosis the importance of the cervical secretions, and the method of collection, the technique of transuterine insufflation with gas, and the transuterine injection of iodized oil are minutely described.

The third section is devoted to treatment, medical, surgical and local, urological or gynecological. In the gynecological chapter the importance of good cervical drainage is emphasized. Endocrinological treatment

is not instituted unless definite indications exist. There is usually an anterior pituitary deficiency.

The book closes with the results of treatment in Dr. Meaker's clinic compared with results before the intensive group study was instituted, and a short chapter on the prevention of sterility. Every physician who may be called upon for advice in this problem of sterility should read this concise, well written and stimulating book.

Periodic Fertility and Sterility in Woman. Professor Hermann Knaus. Trans. by D. H. Kitchin and Kathleen Kitchin, M.Sc., M.B., B.S. 162 pages, illustrated. Price Rm. 16.50, or \$6.50, postpaid. Wilhelm Maudrich, Vienna; Concup Co., Hobart, Indiana, 1934.

Prof. Knaus presents his theory that by keeping a menstrual diary, every woman can determine the fertile and sterile periods of each menstrual cycle and thus evolve a natural method of controlling conception. His conclusions are based on biological experiments on man and animals, these being reported in an interesting manner and with a thoroughness that appears irrefutable. The book also contains a menstrual calendar, as designed by Prof. Knaus.

Nutrition and Disease. Edward Mellanby, M.D., F.R.C.P., F.R.S., late Professor of Pharmacology, University of Sheffield. 171 pages. Price 8/6 net. Oliver & Boyd, Edinburgh, 1934.

An excellently written account of some of the most notable advances in our knowledge of nutrition and disease, *e.g.*, rickets and its prevention.

Papers of Charles V. Chapin, M.D., A Review of Public Health Realities. 244 pages. Price \$1.50. Commonwealth Fund, New York, 1934.

This is a collection of some of the shorter papers by Dr. Chapin on Public Health. They afford a capital insight into his industry and devotion to the cause of the general good.

Medicine and Mysticism. R. O. Moon, M.D., F.R.C.P., Consulting Physician to the National Hospital for Diseases of the Heart and to the Royal Waterloo Hospital. 57 pp. Price 75 cents. Longmans, Green and Co., London, New York, Toronto, 1934.

Mysticism has always been a prominent feature of the religious instinct, and from the earliest days, when superstition and belief in the supernatural were guiding principles in human life, when the offices of priest and physician were usually combined in the same person, there has been a mystical element in Medicine. In the case of Medicine, with the birth and development of the experimental method of research, the mystical element has tended to recede into the background, as we would expect. It was not annihilated, however. At the present time, scientific investigators are getting away from the purely materialistic viewpoint as to phenomena and causation which prevailed fifty years ago, and are ready to admit that many facts in nature cannot be explained on the basis of objective fact. Medicine is no exception. Doctor Moon, in this delightful little book, contrasts the mysticism of the East with that of the West; discusses the teaching of Plato and Pythagoras; Neo-Platonism; deals with the Renaissance period, sketches the mystical elements in such men as Raimond Lull, Paracelsus, Harvey, Van Helmont, Cardanus, Fludd, Stahl, Oken, and Hahnemann, and discusses briefly Christian Science. Doctor Moon gives mysticism a place even in the science of medicine, and concludes that "the physician should at least attempt to have some imaginative apprehension of the ultimate meaning of life, while recognizing that his knowledge is confined to the phenomenal world".